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Raven® 405 UFS-HM

Ultra Fast Set Epoxy
 Hand Mix

Technical Data Sheet

Selection & Specification Data

Description

Raven® 405 Ultra Fast Set (UFS) is a solvent-free 100% solids, high build epoxy formulated for coating manhole inverts and benches. Designed for contractors and municipalities to minimize downtime, Raven 405 UFS will typically allow lateral flow to the invert area of a manhole in 15 minutes after application. Raven 405 UFS high-build ability allows it to be applied on damp or dry concrete surfaces up to ¼" thick.

Typical Uses

Severe Wastewater Environment—Rehabilitation of deteriorated manhole bench and inverts.

Color

The Part A Resin is white; the Part B Curing Agent is blue. When mixed the product is light blue.

Theoretical Coverage Rates

Theoretical coverage is 1604 square feet per gallon at 1 mil DFT. Actual surface coverage will depend on substrate porosity and roughness. A wet film thickness gauge or pump stroke counter may be used to determine actual coating coverage.

Film Thickness

Raven 405 UFS is a 100% solids epoxy with zero shrinkage. Wet film thickness and dry film thickness are the same (i.e. 80 mils WFT = 80 mils DFT). Depending on substrate type and profile, a maximum of 250 mils per coat is recommended to prevent sagging.

Physical Properties (Typical) Independent Testing

| Test | Method | Result |
|----------------------|-------------|-------------------|
| Tensile Strength | ASTM D 638 | 7,600 psi |
| Tensile Elongation | ASTM D 638 | 1.5% |
| Compressive Strength | ASTM D 695 | 16,000 psi |
| Flexural Strength | ASTM D 790 | 13,000 psi |
| Hardness, Shore D | ASTM D 2240 | 88 |
| Adhesion, Concrete | ASTM D 7234 | Substrate Failure |

The value ranges stated in this Technical Data Sheet are based on system processing under controlled laboratory conditions. Equipment configuration and/or field application conditions may produce variances in the final system values.

Substrate and Surface Preparation

General

Prior to coating, the substrate must be prepared in a manner that provides a uniform, clean, sound, neutralized surface suitable for the specified coating. The substrate must be free of all contaminants, such as oil, grease, rust, scale or deposits. In general, coating performance is proportional to the degree of surface preparation.

Concrete & Masonry

Concrete surface must be sound and contaminant-free with a surface profile equivalent to a CSP3 to CSP5 in accordance with ICRI Technical Guideline No. 310.2R-2013. This can generally be achieved by abrasive blasting, shot blasting, high pressure water cleaning, water jetting, or a combination of methods. The pH of the concrete must be >8.



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| Mixing & Thinning | |
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| <p>Components & Mix Ratio</p> <p>Part A Resin: Part B Curing Agent mix ratio is 1.5A:1B by volume. Raven 405UFS is supplied in pre-measured kits. All material in the kits should be mixed thoroughly prior to use. Note: Raven 405 “A” side is compatible with all 405 Series “B” sides.</p> <p>Power Mixing</p> <p>Mix full kits only. Mix each component separately before pouring the Part B into the Part A container. Use a drill with a Jiffy mixer or large paint stir stick and mix for 30-45 seconds. Properly mixed material has a uniform color.</p> | <p>Thinning</p> <p>Do not thin with solvents. Unmixed material should not be heated above 120°F (48°C).</p> <p>Pot Life / Work Time</p> <p>The pot life is 3.5 minutes for 1 gallon kit at 72°F. It is recommended to mix small batches in order to prevent material waste. When applying to cool concrete substrates, the work life may be extended if the material is mixed and immediately emptied out of the containers. This may also effect return-to-service time.</p> |
| Application | |
| <p>Pour the entire container of mixed material on the substrate and spread with trowel, putty knife, or by hand (gloved). For best results, apply to bare concrete when the concrete temperature is stable or falling. When coating inverts and benches in manholes, stop the water flow and allow concrete to dry as much as possible. If needed, dry, clean towels may be used to dry the surface. Let 405 UFS cure for 15 mins at 72°F or until enough body has been attained (could be longer at lower temps) to allow water flow thru the invert.</p> | <p>Substrate Temperature</p> <p>Minimum recommended substrate temperature: 50°F (10°C)</p> <p>Maximum recommended substrate temperature: 120°F (48°C)</p> <p>Temperature Resistance</p> <p>Maximum recommended dry temperature: 150°F. Wet temperature resistance depends on chemical concentration and exposure time.</p> |
| Curing Schedule & Re-Coat Window | |
| <p>Cure Time</p> <p>Film set time varies with substrate temperature and application thickness. Generally, the coating will be set-to-touch in 8 minutes at 72°F (22°C). Typically, water flow can be returned within 15 minutes of application.</p> | <p>Recoat Time</p> <p>This product may be recoated as soon as it becomes tacky but does not transfer to the finger. When applying multiple coats, do not allow more than 1 hour at 72°F (22°C) substrate temperature to pass between coats, higher temperatures will shorten this window. Before recoating; visually inspect, clean and dry surface thoroughly to remove all contamination, including amine blush or condensation. If the recoat time is missed, abrade and clean surfaces prior to recoating.</p> |



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| Cleanup & Safety | |
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| <p>Cleanup</p> <p>To clean tools, use acetone, MEK or xylene. To clean skin, wash immediately and thoroughly with soap and water. Refer to the Safety Data Sheet for additional information on health and safety.</p> | <p>Safety</p> <p>SDS's are available on the website, (www.ravenlining.com) or upon request. Consult the Safety Data Sheet for this product concerning health and safety information before using. Strictly follow all notices on the Safety Data Sheet and container label. If you do not fully understand the notices and procedures provided on the SDS or if you cannot strictly comply with them, do not use this product. Actual safety measures are dependent on application methods and work environment. Keep uncured product away from children at all times.</p> |
| Packaging, Handling, & Storage | |
| <p>Packaging</p> <p>Available in 1 gallon kits (0.60 gal A in gal pail: 0.40 gal B in one gallon pail. Kits are supplied in the correct proportions of parts A, B; the part A & B components must be mixed together before use. Raven 405 UFS is available through Raven Certified Applicators.</p> | <p>Shelf Life</p> <p>Product shelf life is 1 year from purchase date in original unopened containers.</p> <p>Storage Temperature & Humidity</p> <p>Product shelf life is 1 year from purchase date in original unopened containers, store in a sheltered area between 60°F (16°C) and 80°F (27°C).</p> |
| Warranty | |
| <p>Limited Warranty. Company warrants its goods to be free of manufacturing defects. Goods manufactured by Company will comply with all applicable federal, state and local laws and regulations. Company makes no warranty as to any parts or equipment manufactured by others. Customer shall look solely and only to the manufacturer of such parts or equipment with respect to any warranty claims. Company hereby assigns to Customer the original manufacturer's warranties to all such equipment and parts, to the full extent permitted. THE AFORESAID IS THE EXCLUSIVE WARRANTY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. SPECIFICALLY, THERE ARE NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.</p> <p>Limitation of Liability. COMPANY'S LIABILITY FOR DEFECTIVE OR NON-CONFORMING GOODS SHALL BE LIMITED TO, AND SHALL IN NO EVENT EXCEED, THE AMOUNT PAID BY CUSTOMER FOR SUCH DEFECTIVE OR NON-CONFORMING GOODS. UNDER NO CIRCUMSTANCES SHALL COMPANY BE LIABLE FOR ANY SPECIAL, PUNITIVE, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR FOR LOST PROFITS. In no event may any claim by Customer arising from or relating to any sale of any goods or services referenced herein be brought more than one year after the date of delivery of such Goods.</p> | |