



Raven 405

DESCRIPTION

Raven® 405 is a solvent-free 100% solids, ultra high build epoxy coating formulated with exceptionally high physical strengths and broad range chemical resistance. 405 exhibits superior bond to concrete, steel, masonry, fiberglass and other surfaces. Designed for operating temperatures up to 200°F, 405's unique ultra high-build ability allows it to be spray applied on vertical and overhead surfaces. The surface tolerance and high physical strengths of 405 allow it to be designed as a structural lining in manholes, pipelines, tanks and other deteriorated structures.

TYPICAL USES

Surfaces where rehabilitation of an existing structure requires enhancement of the structural integrity and where exposure to concentrated acids and caustics may be expected, including:

- Tunnels and pipelines
- Digesters
- Secondary containment
- Wastewater facilities
- Clarifiers
- Tanks
- Manholes
- Floors and walls

COLOR

Light blue is standard. Limited special colors are available on request. Contact RLS for information.

SOLIDS BY VOLUME

100% solids by volume

Volatile Organic Compounds: 0.0 lbs/gallon

FILM THICKNESS

Raven 405 is a 100% solids epoxy with zero shrinkage. Therefore, actual wet film thickness and final dry film thickness are the same (i.e. 10 mils WFT=10 mils DFT). Dependent upon surface profile, a maximum of 200 mils per coat is recommended to prevent sagging on vertical or overhead surfaces. Generally, application of two coats are recommended for quality assurance in coverage. A wet film thickness gauge can be used to determine coating coverage.

THEORETICAL COVERAGE

40 sq. ft. per gallon at 40 mils thickness. Actual surface coverage will depend on surface irregularities and desired result. Trials are recommended to determine the actual coverage required to yield a desired film thickness for each individual type of installation. Recommended coverage will vary from 40-250+ mils depending on the installation. Additional information is available by contacting RLS.

APPLICATION METHOD

Brush, roller, heated plural component airless or air-assisted spray. For specific information on application, spray system design, approved systems and Certified Applicators contact RLS.

THINNING

Do not thin with solvents; pinholing and loss of adhesion can result. If lower viscosity is desired, drum heaters and inline heaters can be used for larger quantities and on specialized spray equipment. Material components should not be heated beyond manufacturer's suggested limits. Contact RLS for detailed information.

CLEAN-UP

To clean tools, use acetone, xylene or MEK. To clean skin, immediately wash thoroughly with soap and water. Refer to the Material Safety Data Sheet for additional information on health and safety.

POT LIFE

20 minutes for 1 gallon at 75°F.

15 minutes for 2 gallons at 75°F.

The amount of pot life and working life will vary depending on the quantity and temperature of epoxy mixed, ambient temperature and the container in which the mixed material is held. Contact RLS for additional information.

CURE AND RECOAT TIME

Initial set generally occurs within 6 hours at 70°F. Curing continues for several days, even underwater. When applying multiple coats, no more than 24 hours at 70°F should be permitted to pass between coats. Environmental conditions may shorten this window. Protect surfaces from contamination of any type between coats. Before recoating, inspect, dry and clean surface thoroughly to remove all contaminants, including amine blush and condensation. If the recoat window is missed, clean and abrade surfaces prior to topcoating. For additional information contact RLS.

SURFACE TEMPERATURE

Minimum recommended: 40°F.

Maximum recommended: 120°F.

SURFACE PREPARATION

Surfaces to receive coating must be cleaned of all oil, grease, rust, scale, deposits and other contaminants. Contact RLS for additional recommendations.

STEEL surfaces may require "Solvent Cleaning" (SSPC-SP1) to remove oil, grease and other soluble contaminants. Surfaces to be coated should then be prepared according to SSPC-SP10 or NACE No. 2: "Near White Blast Cleaning". In certain situations, an alternate procedure may be to use high (>5,000psi) or ultrahigh (>10,000psi) pressure water cleaning or water with sand injection and an approved rust inhibitor. The anchor profile for surface preparation must be a minimum of 2 mils.

CONCRETE AND MASONRY surfaces can generally be prepared by high pressure water cleaning, water jetting, abrasive blasting, shotblasting, or a combination of methods. A penetrating primer such as low viscosity Raven 120 may be recommended.

FIBERGLASS surfaces should be rinsed and neutralized, scarified and cleaned with water or an emulsion of solvent and water to remove remaining dust and loose particles. Allow the surface to dry thoroughly.

AVAILABLE PACKAGES

5 gallon pails (20 gallon kit), 30 gallon drums (120 gallon kit), 55 gallon drums (220 gallon kit). Raven 405 is available through Certified Applicators.

COMPONENTS AND MIXED RATIO

Part A, Resin. Part B, Hardener. 3:1 by volume.

VISCOSITY

Part A, 160,000 cps at 23°C, Brookfield RVF

Part B, 40,000 cps at 23°C, Brookfield RVF

SHELF LIFE AND STORAGE

Shelf Life: 1 year in sealed, unmixed containers at room temperature. Store in a sheltered area between 60°F and 80°F (15°C and 27°C).

SAFETY

Consult the Material Safety Data Sheet for this product concerning health and safety information before using. Strictly follow all notices on the Material Safety Data Sheet and container label. If you do not fully understand the notices and procedures provided or if you cannot strictly comply with them, do not use this product. Actual safety measures are dependent on application methods and work environment. Contact RLS to obtain a copy of the Material Safety Data Sheet at 800-324-2810.

PERFORMANCE TESTING

DESCRIPTION	METHOD	RESULTS
Flexural Strength	ASTM D790	13,000 psi
Compressive Strength	ASTM D695	18,000 psi
Tensile Strength	ASTM D638	7,600 psi
Tensile Ultimate Elongation	ASTM D638	1.5%
Hardness, Shore D	ASTM D2240	88
Water Vapor Transmission	ASTM D1653, Method B	3.8 gms/sq.m. per 24 hours
Taber Abrasion, CS17 Wheel	ASTM D4060, 1000 g load/1000 cycles	<112 mg loss
Adhesion	ASTM D4541, Concrete Steel (SSPC SP-10)	Substrate Failure >1,400 psi

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