PPG RAVEN® 405 TR Epoxy

DESCRIPTION

100% solids, epoxy coating designed for longer pot life and trowel application

PRINCIPAL CHARACTERISTICS

- Ultra-high build characteristics
- Excellent chemical resistance
- Bonds to dry and damp concrete, masonry and steel
- Acceptable for both new and existing structures
- TYPICAL USES:
- Wastewater structures, buried pipelines, tanks and other corrosive environments
- The trowel option is ideal for areas where a spray application is not feasible
- Resurfacing or holiday repairs with pre-mixed kits

Note: Information Sheet available with test and certification data

COLOR AND GLOSS LEVEL

- Part A is White, Part B is Blue; Mixed product is Light Blue
- Semi-gloss
- Addition of white Raven 240 (Part C) will shift the color slightly lighter

Note: Color changes can occur under UV-exposure without negative impact on the product performance

BASIC DATA AT 72°F (22°C)

Data for mixed product	
Number of components	Two
Mass density	10.0 lb/US gal (1.2 kg/l)
Volume solids	100 ± 2%
VOC (Supplied)	EPA Method 24: 0.0 lb/US gal (0.5 g/l)
Recommended dry film thickness	80.0 - 500.0 mils (2000 - 12500 µm) per coat
Theoretical spreading rate	20 ft^2/US gal for 80.0 mils (5.0 m^2/l for 2000 µm) 6 ft^2/US gal for 250.0 mils (0.6 m^2/l for 6250 µm)
Dry to touch	3.5 hours
Overcoating Interval	Minimum: Coating should no longer leave residue when touched with a gloved finger Maximum: 12 hours

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Data for mixed product	
Curing time	5 hours

Notes:
- Listed spreading rate is for mixed Part A & Part B only. Theoretical spreading rate for A, B & C combined is 31 ft^2 at 125 mils for the entire 2.42 gallon kit (2.92 m^2 at 3175 µm for the entire 9.2 liter kit).
- See ADDITIONAL DATA – Spreading rate and film thickness
- If overcoat time is exceeded, abrade and clean surface before recoating
- Curing time reflects ready for service time
- The shelf life for the unmixed components (Part A and Part B) for this product is 12 months at 70°F (21°C).
- Material should be stored in dry conditions, out of direct sunlight, and in unopened original factory containers, at temperatures above 60°F (16°C) and below 100°F (38°C)

RECOMMENDED SUBSTRATE CONDITIONS AND TEMPERATURES

Concrete / Masonry

- Surface must be clean, uniform, sound, and free from contamination (such as oil, grease, rust, scale, or deposits)
- Abrade surface to achieve a surface profile equivalent to CSP 3 to CSP 5 in accordance with ICRI 310.2R-2013
- Prepare in accordance with SSPC SP-13 guidelines
- Concrete pH must be 8.0 or higher

Steel (Immersion Service)

- Remove all surface contaminants, oil and grease in accordance with SSPC SP-1
- Abrasive blast with an angular abrasive to an SSPC SP-10 cleanliness or higher. Achieve a surface profile of 3.0 – 5.0 mils (75 – 125 µm)

Substrate temperature

- Substrate temperature during application should be between 50°F (10°C) and 120°F (49°C)

Note: For best results in limiting outgassing, apply to prepared concrete when the substrate temperature is stable or falling

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SYSTEM SPECIFICATION

- Recommended DFT for New/Smooth Concrete: 80-250 mils (2030-6350 µm)
- Recommended DFT for Rough Concrete: 100-500 mils (2540-12700 µm)
- Recommended DFT for Resurfaced Concrete: 80-250 mils (2030-6350 µm)
- Recommended DFT for Masonry/Brick: 125-250 mils (3175-6350 µm)
- Recommended DFT for Resurfaced Masonry/Brick: 80-250 mils (2030-6350 µm)
- Recommended DFT for Steel (Carbon): 30-80 mils (762-2030 µm)
- Primers for concrete (optional): PPG RAVEN® 175 Primer, PPG RAVEN® 171FS Primer, PPG RAVEN® 155 Primer
- Primers for Carbon Steel: PPG AquataPoxy® 190 Primer*, PPG AquataPoxy® 90 Epoxy Coating*
- Primers for non-ferrous metals: PPG AquataPoxy® 190 Primer*

Note: *Do not use this primer if immersion temperatures will exceed 140°F (60°C)

INSTRUCTIONS FOR USE

Mixing ratio by volume: Part A to Part B 3:1

- Only mix full kits
- Mix Part A and Part B separately to ensure uniformity. Then, pour Part B into Part A container and thoroughly mix the two components of the kit together for 2 minutes with mechanical jiffy-type mixer
- Optional Part C, needs to be added to the mixed Part A & Part B at 50% by weight
- Properly mixed material will be a uniform color without light or dark spots
- The temperature of the unmixed material should not be above 120°F (48°C)

Pot life

30 minutes at 72°F (22°C)

Notes:

- Listed pot life is for 0.5 US gallon (1.9 liter) quantity
- Longer pot life is possible by mixing smaller amounts and cooling down the components before mixing

Trowel

- When the optional Part C is added to Part A & Part B, apply with trowel or putty knife

Recommended thinner

No thinner should be added

Brush/roller

- Apply mixed Part A & Part B with squeegee, brush or roller

Recommended thinner

No thinner should be added

Cleaning solvent

MEK, acetone or xylene

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ADDITIONAL DATA

Spreading rate and film thickness for Parts A & B	
DFT	**Theoretical spreading rate**
30.0 mils (762 µm)	53 ft^2/US gal (1.3 m^2/l)
80.0 mils (2032 µm)	20 ft^2/US gal (0.5 m^2/l)
100.0 mils (2540 µm)	16 ft^2/US gal (0.4 m^2/l)
125.0 mils (3175 µm)	13 ft^2/US gal (0.3 m^2/l)
250.0 mils (6350 µm)	6 ft^2/US gal (0.2 m^2/l)
500.0 mils (12700 µm)	3 ft^2/US gal (0.1 m^2/l)

Spreading rate and film thickness for Parts A, B & C	
DFT	**Theoretical spreading rate**
30.0 mils (762 µm)	63 ft^2/US gal (5.4 m^2/l)
80.0 mils (2032 µm)	23 ft^2/US gal (2.0 m^2/l)
100.0 mils (2540 µm)	19 ft^2/US gal (1.6 m^2/l)
125.0 mils (3175 µm)	15 ft^2/US gal (0.5 m^2/l)
250.0 mils (6350 µm)	8 ft^2/US gal (0.7 m^2/l)
500.0 mils (12700 µm)	4 ft^2/US gal (0.3 m^2/l)

Physical data of cured material	
Characteristic	**Value**
Tensile Strength (ASTM D638)	>4,900 psi (>34 MPa)
Tensile Elongation (ASTM D638)	>0.7%
Compressive Strength (ASTM D695)	>18,600 psi (>128 MPa)
Flexural Strength (ASTM D790)	>10,100 psi (>70 MPa)
Tensile Strength (1) (ASTM D638)	>4,000 psi (>28 MPa)
Tensile Elongation (1) (ASTM D638)	>0.5%
Compressive Strength (1) (ASTM D695)	>11,200 psi (>77 MPa)
Flexural Strength (1) (ASTM D790)	>8,000 psi (>55 MPa)
Hardness, Shore D (ASTM D2240)	85
Adhesion to Concrete (ASTM D7234)	To substrate failure

Notes:

- The value ranges stated in this Technical Data Sheet are based on system processing under laboratory conditions. Equipment configurations and/or field application conditions may produce variances in final system values.
- (1) Properties when tested with Raven 240 (Part C) at 50% weight of mixed Part A & Part B

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- PPG Protective & Marine Coatings does not accept any responsibility or liability for any odor, taste or contamination imparted to the drinking water from the coatings or products retained in the coating
- For industrial or professional use only
- This product is specifically suitable for use on the substrates mentioned in this document. For application on any other substrates, please always contact your distributor for specific instructions and in order to make sure that the product performance can be safeguarded.

SAFETY PRECAUTIONS

- Read all label and Safety Data Sheet (SDS) information prior to use

WORLDWIDE AVAILABILITY

It is always the aim of PPG Protective and Marine Coatings to supply the same product on a worldwide basis. However, slight modification of the product is sometimes necessary to comply with local or national rules/circumstances. Under these circumstances an alternative product data sheet is used.

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