

SECTION 09966 - ABRASION RESISTANT COATINGS

PART 1 GENERAL

1.01 SUMMARY

- A. A high performance coating system that consists of a three-component epoxy primer and a proprietary one-component, aliphatic, moisture-cure urethane for protecting interior concrete floors. Complies with VOC/VOS Rules and Regulations, and L.A. Rule 66.

1.02 PERFORMANCE REQUIREMENTS

- A. Chemical Resistance: Excellent chemical resistance to Jet Fuel (JP-4), Xylene, Brake Fluid, Skydrol® 500B and Skydrol® LD4 with no adverse effects, based on 7 day spot testing on concrete.
- B. See Section 2.02 Chemical Resistance for additional performance requirements.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, including physical properties, chemical resistance, surface preparation and application instructions.
- B. Submit list of five projects similar in nature, which have been installed by applicator during the last five years, identified with project name, location, name of owner's representative, their phone number and date.
- C. Submit manufacturer's standard warranty and applicator's warranty.

1.04 QUALITY ASSURANCE

- A. Applicator Qualifications:
 - 1. A minimum of three years experience in the application of coatings or resurfacers to concrete floors.
 - 2. A minimum of ten jobs or 1,000,000 square feet of successful applications.
- B. Pre-Application Meeting: Convene a pre-application meeting 2 weeks before the start of application of floor coating system. Require attendance of parties directly affecting work of this section, including the Contractor, Architect, Applicator and Manufacturer's Representative. Review the surface preparation, application, cleaning, protection and coordination with other work.
- C. Single Source Responsibility
 - 1. Obtain Abrasion Resistant Coating materials including primers, base coat, and finish coats from a single manufacturer.

1.05 PROJECT CONDITIONS

- A. Maintain substrate temperature and room temperature before, during and after installation in compliance with flooring manufacturer's instructions. Provide adequate ventilation during application and curing periods.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store materials in accordance with manufacturer's instructions.
 - 1. Store materials in dry, enclosed area with adequate protection from moisture.
 - 2. Keep containers sealed until ready for use.
 - 3. Storage Temperature: 65°F (18°C) and 90°F (32°C).

1.07 WARRANTY

- A. Provide one (1) year application and material warranty.

PART 2 PRODUCTS

2.01 MATERIALS

- A. The following manufacturer products shall be used as a basis for performance and quality requirements.
- B. Primer: Tennant Eco-HPS™ Primer - High Performance System Primer. A three-component epoxy primer.
 - 1. Percent Solids, ASTM D2369
 - 1. Part A - 94.35%
 - 2. Part B - 99.82%
 - 2. Volatile Organic Compound (VOC), ASTM D3960
 - 1. 0.41 lb/gal or 50 g/L
 - 3. Tensile Strength, ASTM D2370
 - 1. 8,000 psi or 55,200 kPa
 - 4. Percent Elongation, ASTM D2370
 - 1. 5%
- C. Coating: Tennant Eco-HPS™ - High Performance System. A one-component, aliphatic, moisture-cure urethane.
 - 1. Percent Solids, ASTM D2369
 - 1. 90%
 - 2. Volatile Organic Compound (VOC), ASTM D3960
 - 1. 0.93 lb/gal or 112 g/L
 - 3. Abrasion Resistance, ASTM D4060
 - 1. 25-35 mg loss
 - 4. Tensile Strength, ASTM D2370
 - 1. 9,500 psi or 65,550 K Pa
 - 5. Percent Elongation, ASTM D2370
 - 1. 5%

6. Sward Hardness, ASTM D2134
 1. 40-50 (1 mil film)

D. Bonding Additive: Tennant 413 SF Bonding Additive

1. Solvent free

E. Colorant: Tennant Colorants

1. Battleship Gray, Tile Red, Smoke Blue, Ivy Green, Medium Gray, Yellow, Canada Gray, Regal Blue, Sandy Beige, Black, White, Rotunda Red and Light Gray.

F. Traction Grit (In areas as directed by the Contracting Officer)

1. Tennant 291 Grit (60 mesh) - white aluminum oxide

G. Cleaners and Related Products:

1. Industrial Grease Remover: Tennant Detergent

1. Tennant detergents are available in a range of formulations which remove a variety of soilage.

2. Cleaner/Remover: Tennant 531/528 Cleaner/Remover

1. High flash naphtha solvent, curing membrane remover

3. Remover: Tennant 510 Remover

1. Methylene chloride based

4. Cleaner/Etchant: Tennant 409 Pre-Kote Cleaner or equivalent Tennant etchant for use by Tennant Authorized Contractor.

1. Blend of buffered acids and emulsifiers.

2.02 TECH DATA

Eco-HPS™ -- High Performance System

Material Properties (Liquid)

Property	Test Method	Results
Flash Point, °F (°C)	ASTM D3278	190 (88)
Seta Closed Cup		
Percent Solids, by wt	ASTM D2369	90.0
Density, lb/gal (kg/L)	ASTM D1475	9.34 (1.12)
Shelf Life		Minimum 1 year
Viscosity, cps	ASTM D2196	400-500
Brookfield		
Volatile Organic Compound - VOC	ASTM D3960	0.93 (112)
lb/gal (g/L)		

Cured Coating Properties (Dry Film)

Property	Test Method	Results
Abrasion Resistance, <i>mg loss*</i>	ASTM D4060*	25-35
Taber Abraser		
Coefficient of Friction - COF	ASTM D2047	0.52-0.55
James Friction Tester		
Dry Film Thickness, <i>mils</i>		2.6 (1 coat)
Tensile Strength, <i>psi (kPa)</i>	ASTM D2370	9,500 (65,550)
Percent Elongation	ASTM D2370	5
Sward Hardness (1 mil film)	ASTM D2134	40-50

*ASTM D4060, CS-17 Taber Abrasion Wheel (1,000 gram load, 1,000 revolutions)

Application Characteristics

Coverage Rate, <i>ft²/gal</i>	500-600
Application Thickness, <i>wet mils</i>	2.9 (1 coat)

Results are based on conditions at 77°F, 50% relative humidity.

Chemical Resistance

	1 Day	7 Day		
Acids, Inorganic	10% Hydrochloric Acid		E	G
	30% Hydrochloric Acid (Muriatic)	F	F	
	10% Nitric Acid	F	P	
	50% Phosphoric Acid	E	G	
	37% Sulfuric Acid (Battery Acid)		G	G
Acids, Organic	10% Acetic Acid		G	F
	10% Citric Acid	E	G	
	Oleic Acid	E	E	
Alkalies	10% Ammonium Hydroxide		E	E
	50% Sodium Hydroxide	E	G	
Solvents (Alcohols)	Ethylene Glycol (Antifreeze)			E
	Isopropyl Alcohol	F	F	
	Methanol	G	F	
Solvents (Aliphatic)	d-Limonene		E	E
	Jet Fuel - JP-4	E	E	
	Gasoline	E	E	
	Mineral Spirits	E	E	
Solvents (Aromatic)	Xylene		E	E
Solvents (Chlorinated)	Methylene Chloride			P
Solvents (Ketones & Esters)	Methyl Ethyl Ketone (MEK)			P
	Propylene Glycol Methyl Ether Acetate (PMA)		E	G
Miscellaneous Chemicals	20% Ammonium Nitrate		E	E
	Brake Fluid	E	E	
	Bleach	G	G	
	Motor Oil (SAE30)	E	E	
	Skydrol® 500B	E	E	
	Skydrol® LD4	E	E	
	20% Sodium Chloride	E	E	
	1% Tide® Laundry Soap		E	G
	10% Trisodium Phosphate		E	E

Based on 1-day and 7-day spot testing on concrete. Coating cured 2 weeks prior to testing.

Legend:

- E - Excellent (No Adverse Effect)
- G - Good (Limited Adverse Effect)
- F - Fair (Moderate Adverse Effect)
- P - Poor (Unsatisfactory)

Tide is a registered trademark of Proctor and Gamble. Skydrol is a registered trademark of Monsanto.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine concrete surface to receive floor coating system. Notify the Architect if surface is not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.
- B. Allow concrete substrate to cure a minimum of 30 days.
- C. Use a Delmhorst moisture meter to check the moisture content of concrete. An unacceptably high reading is 22 or above on a wood scale.

3.02 PREPARATION

- A. Prepare surface in accordance with manufacturer's instructions.
 - 1. See Section 09965 for primer preparation.

3.03 APPLICATION

- A. Apply floor coating system in accordance with manufacturer's instructions.
 - 1. Assemble squeegees and rollers; clean rollers to remove residual lint.
 - 2. Primer: Eco-MPE™ Primer - see Section 09965.
 - 3. Coating: Eco-HPS™ -- High Performance System.
 - 1. Open and mix only enough material which can be applied in a 2 hour period.
 - 2. Apply Eco-HPS™ at the rate of 500 ft²/gal.
 - 3. Allow coating to dry 24 hours at 75 degrees F (24 degrees C) and 50% relative humidity.
 - 4. Apply 2 top coats over 1 coat of MPE primer.

3.04 PROTECTION

- A. Close job site to traffic for a period of 24 hours after coating application

END OF SECTION 09966