PPG VERSAFLEX® 3000 / 5000 POLYUREA COATINGS

Application guidelines

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1. INTRODUCTION

This application guideline establishes the minimum technical requirements, and describes the work to be performed, for the application of PPG VERSAFLEX 3000 and PPG VERSAFLEX 5000 and related systems.

This work is to include total responsibility for surface preparation, cleaning, environmental control of the work area, abrasive cleanup and the application of the polyurea system.

Applicator training is required and spray equipment must be approved by PPG prior to the application of any coating materials.

2. PHYSICAL PROPERTIES

PROPERTY	PPG VERSAFLEX 3000	PPG VERSAFLEX 5000
Tensile strength, psi (MPa) ASTM D-412	1,700 – 2,500 (11.7 – 17.2)	2,000 – 3,200 (13.7 – 22.0)
Elongation (%) ASTM D-412	170 – 270	40 – 60
Young's Modulus, MPa ASTM D-412	315 - 367	540 - 727
Tear Resistance, pli (N/mm) ASTM D-624	410 – 573 (71.2 – 100.3)	354 – 577 (62.0 – 101.0)
Abrasion, mg loss, CS-17 wheel, 1kg load, ASTM D-4060	38	32.9
Hardness, Shore D ASTM D-2240	60-65	68 – 74
Impact Resistance, 43.4 in-lb (4.9J) ASTM G-14	No Cracking	No Cracking
Mandrel bend Conical ASTM D-522	No Cracking	No Cracking
Water Absorption, % in 24hr ASTM D-570	3.66	1.86
Water Permeation, Perms (g/Pa-s-m2) ASTM E-96	1.2 (7 X 10^{-8})	0.98 (5.6 X 10^{-8})
Salt Spray 1,440 hrs ASTM B117	No Creep	No Creep
Surface Burning Characteristics per ASTM E-84		
Classification in accordance with NFPA 101® Life Safety Code® and International Building Code (IBC)	Class A	Class A
Smoke Developed Index	300	5
Flame Spread Index	15	15

3. CURING PROPERTIES

PROPERTY @ 68°F / 20°C	PPG VERSAFLEX 3000	PPG VERSAFLEX 5000
Gel Time	15 sec	65 sec
Tack Free Time	30 - 40 sec	12 min
Dry to Handle	5 – 7 min	20 – 30 min
Recoat Window, max. (hours)	24	24

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4. SURFACE PREPARATION

For PPG VERSAFLEX 3000 / 5000:
Compatible previous coat or primer must be within recoat window or thoroughly abraded, and free of any contamination.

4.1 Concrete / Masonry
- Remove grease, oil and other penetrating contaminants according to ASTM D4258
- Abrade the surface per ASTM D4259 to remove all chalk and surface glaze or laitance. Achieve surface profile - ICRI CSP 3 to 5
- Fill voids as necessary with NOVAGUARD 5090 epoxy filler
- Maximum recommended moisture transmission rate is 3 lbs / 1,000 ft2 / 24 hours by moisture transmission test (ASTM F1869, calcium chloride test or by ASTM D4263, plastic sheet test)

For PPG VERSAFLEX 3000:

4.2 Carbon steel
- For atmospheric service, abrasive blast to ISO-Sa2½ or minimum SSPC SP-6, power tool cleaned to SSPC SP-3 (ISO-St3) or hand tool cleaned to SSPC SP-2 (ISO-St2) or ultra-high pressure water jet to SSPC SP WJ-2(L) / NACE WJ-2(L)

4.3 Galvanized steel
- Remove oil or soap film with detergent or emulsion cleaner
- Lightly abrasive blast with a fine abrasive in accordance with SSPC SP-16 guidelines to achieve a profile of 1.5- 3.0 mils (40 - 75 µm). When light abrasive blasting is not possible, galvanizing can be treated with a suitable zinc phosphate conversion coating
- Galvanizing that has had at least 12 months of exterior weathering may be coated after power washing to remove all contaminants and white rust

4.4 Non-ferrous metals and stainless steel
- Remove all rust, dirt, moisture, grease or other contaminants from the surface
- Lightly abrasive blast with a fine abrasive in accordance with SSPC SP-16 guidelines to achieve a profile of 1.5 - 4.0 mils (40 - 100 µm)

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5. APPLICATION – GENERAL

- Coatings shall be applied in accordance with the requirements of this application manual and the relevant product datasheet(s), to clean, dry surfaces
- Surface temperature of the substrate should be at least 5°F (3°C) above the dew point and rising, before any coating work is attempted
- No application of PPG VERSAFLEX 3000 / 5000 shall take place at a relative humidity above 85%.
- Coating application shall be restricted to ambient and substrate temperatures in the 35 - 120°F (2 - 49°C) range

5.1 Application – equipment

- Heated Plural Component Airless, 1:1 volume ratio
- 1 ¼ gallons per minute minimum at a tip pressure of 2000-2500 psi (13.8 – 17.2 MPa)
- Drum heaters capable of maintaining material temperatures of 70° - 110°F (21 - 43°C) during application and 1:1 ratio minimum material transfer pumps
- Proportioner heaters and heated material hose capable of maintaining material temperatures of 140° - 160°F (60 - 71°C) at the spray tip
- All product datasheet testing was performed using a Graco GX-7DI spray with 29/26 module (for PPG VERSAFLEX 5000) or 29/28 module (for PPG VERSAFLEX 3000) and 213 tip or a Probler P2 with 00 module, 00 insert and 431 tip. Use these or equivalent for best results

5.2 Primer application

- See primer product data sheet for application instructions

5.3 PPG VERSAFLEX 3000 basecoat application

- PPG VERSAFLEX 3000 polyurea is a 100% solids by volume, two (2) component (1:1 mix ratio by volume) elastomeric aromatic pure polyurea coating
- Refer to the current Polyurea Coating Product Data Sheet for primer recommendations.
- Do not thin or cut the Polyurea
- Basecoat resin shall be pre-mixed prior to application
- Polyurea shall be applied using a multi-pass, “cross-hatch” spray technique
- Recoating after twenty-four (24) hours will require surface roughening

5.4 PPG VERSAFLEX 5000 topcoat application

- PPG VERSAFLEX 5000 polyurea is a 100% solids by volume, two (2) component (1:1 mix ratio by volume) elastomeric aliphatic pure polyurea coating
- Refer to the current Polyurea Coating Product Data Sheet for primer recommendations
- Do not thin or cut the Polyurea
- Basecoat resin shall be pre-mixed prior to application
- Polyurea shall be applied using a multi-pass, “cross-hatch” spray technique
- Recoating after twenty-four (24) hours will require surface roughening

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6. OTHER INFORMATION

PROPERTY	PPG VERSAFLEX 3000		PPG VERSAFLEX 5000	
	A (Isocyanate)	B (Resin)	A (Isocyanate)	B (Resin)
Mix Ratio by volume	1:1		1:1	
Shelf Life (months)	6	12	12	12
Density, lbs/gal (kg/l)	9.5 (1.1)	9.9 (1.2)	9.2 (1.1)	9.2 (1.2)
Viscosity (cPs) @ 74F	300 - 600	1,300 – 1,700	1,400 – 1,700	1,700 – 1,800
Viscosity (cPs) @ 140F	100 - 150	110 - 250	160 – 180	630 - 660
Recommended DFT (µm)	20 – 40 (508 - 1016)		10 – 20 (254 - 508)	
Theoretical Coverage ft2 gal (m2/l)	40 – 80 (1 – 2)		80 – 160 (2 - 4)	
Color	Amber	Tan	Colorless	White
Storage Temperature	50-100°F (10 – 38°C)		50-100°F (10 – 38°C)	
Service Temperature Resistance	-20 to 200°F (-29 to 93°C)		-20 to 200°F (-29 to 93°C)	
Gun Module/Tip – GX-7DI	29/28 module orifice w/213 tip		29/26 module orifice w/213 tip	
Gun Module/Tip – Probler P2	00 Module & Insert w/431 tip		00 Module & Insert w/431 tip	
Gun filter screens, mesh	40		40	

7. SAFETY PRECAUTIONS

- Although this is a solvent-free paint, care should be taken to avoid inhalation of spray mist, as well as contact between the wet paint and exposed skin or eyes
- Read all label and Safety Data Sheet (SDS) information prior to use

LIMITATION OF LIABILITY