VF 280

Spray Polyurea

Technical Data Sheet

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Selection and Specification Data

Description

VF 280 is a fast set, rapid curing, pure elastomeric polyurea protective coating for industrial applications requiring a flexible coating or lining for waterproofing or secondary containment. This protective membrane can be applied to geotextile fabric, concrete and steel substrates. **VF 280** is a volatile free, odorless system proportioned at a 1:1 mix ratio with plural component spray equipment. **VF 280** may be applied at varying thicknesses in a single application using a multi-pass spray technique.

Ideal For:

- Waterproofing membranes
- Secondary containment
- Geotextile liners

Advantages:

- Made in the USA at an ISO 9001:2015 Certified Facility
- 100% solids, no VOC's
- Tough, resilient, elastomeric membrane
- Fast return to service
- Extremely low curing stress shrinkage
- Dry exposure range of –20°F to 250°F
- Installation range of –20°F to 160°F

Color & Stability (Limitations)

Standard colors are Black (VF1280), Tan (VF1223), Dark Gray (VF1220), and Light Gray (VF1221). Custom colors are available upon request. Note: Custom colors are not returnable; custom color options can be viewed at www.versaflex.com. The A-side (Iso) color could vary from clear to amber.

Limitations

VF 280 is an aromatic polyurea, and discoloration from exposure to ultraviolet light may occur, however, the physical properties are unaffected. **VF-280** should not be used for direct contact with extremely high or low pH levels. When applying to geotextile fabric, the installer must ensure a method for properly anchoring the geotextile fabric to the host surface.

Physical Properties (Typical) - (Post cured at 225°F for 24 hours)

Description	Method	Result
VOC (g/l)	Theoretical	**0**
Solid Content	Theoretical	**100%**
Gel Time	ASTM D1640	**~10-18 sec.**
Tack Free Time	ASTM D1640	**~30-45sec.**
Light Traffic	ASTM D1640	**< 120 min.**
Tensile Strength	ASTM D638	**3,289 psi**
Elongation	ASTM D638	**456%**
100% Modulus	ASTM D638	**974 psi**
200% Modulus	ASTM D638	**1,393 psi**
300% Modulus	ASTM D638	**1,904 psi**
Shore A Hardness	ASTM D2240	**85**
Shore D Hardness	ASTM D2240	**35**
Adhesion to Steel[2]	ASTM D4541	**> 500 psi**
Adhesion to Concrete[3]	ASTM D7234	**> 200 psi[4]**

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.

Coverage Rate

VF 280 is designed for a variety of substrates and applications. Application method, substrate roughness, profile, and porosity will affect coverage rates. Always consult the specification and contract documents prior to installation.

Recommended Dry Film Thickness (Typical exposure)	
Concrete:	80-100+ mils dft.
Steel (Carbon)	60-80 mils dft.
Geotextile Fabric:	60-80 mils dft.

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Substrate and Surface Preparation

General

Before coating, the substrate must be prepared in a manner that provides a uniform, clean, sound, and neutralized surface suitable for the specified coating. The substrate shall be free of all contaminants, such as oil, grease, rust, scale or deposits. The substrate shall be free of all dirt, dust, debris and deleterious material. Coating performance is dependent on the degree of surface preparation.

Geotextile

Ensure geotextile is clean, dry, and free of dirt, dust, debris, or deleterious material. Only apply to the "ironed" side of geotextile. Non-woven, or spun-woven geotextiles are recommended.

Concrete & Masonry

Reference SSPC-SP 13/NACE No. 6 Surface Preparation of Concrete. Minimum surface profile equivalent to ICRI CSP3 to CSP5 in accordance with ICRI Technical Guideline No. 310.2R-2013. Maximum Moisture Content of 3 lb./24 hr./1,000 ft² per ASTM F1869 and/or 5% maximum as per ASTM F2420.

Steel (Atmospheric/Non-Immersion Service)

Visible deposits of oil, grease or other contaminants shall be removed according to SSPC-SP 1. Prepare following SSPC-SP6/ NACE No. 3 Commercial Blast Cleaning. Provide a sharp angular anchor profile of 3.0 mil or greater.

Non-Ferrous Metals

Reference SSPC SP-16 Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steel and Non-Ferrous Metals. Only use non-metallic blast media. Contact VersaFlex Technical Services for primer recommendation and additional information.

Recommended Primer	
Concrete & Masonry	VF-20 VF-15 Raven 175 Raven 171FS
Ferrous Metal (Optional)	AquataPoxy 190
Polyurea Tie-In	Raven 161 or Tack Coat
Wood & Fiberglass	VF-20 VF-15

Note: Substrate composition and moisture, application temperature, exposure temperature, and site conditions may effect primer selection.

VersaFlex is part of a family of companies. Specific primers may be available for different substrates or service conditions.

Mixing, Thinning and Pre-Warming

Mixing:

B Side component must be thoroughly agitated prior to use. Mix using a manufactures recommended 3-tier, collapsible blade power mixer through the center bung hole. Mixer diameter should be ⅓ diameter of the container. Mix for at least 30 minutes prior to processing. Color should be a consistent uniform color without striations.

Components & Mix Ratio:

Mix ratio is 1:1 by volume

Thinning:

DO NOT THIN.

Pre-warming:

A and B components should be warmed to a minimum of 70°F prior to processing.

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Application and Equipment Guidelines

General

VersaFlex VF 280 must be installed using heated plural component, direct impingement mix application equipment.

- Material supply capacity should be 4x the material output of the selected spray gun configuration.
- Processing equipment should be capable of maintaining set temperatures and pressures at rest and during operation.
- Proper equipment selection and maintenance is critical to achieving material properties.

Additional equipment manufacturers and set-ups are acceptable.

Apply **VersaFlex VF 280** in a uniform manner to the desired thickness. The film thickness is determined by spray gun configuration and speed of application. Lower output configurations are recommended for vertical and overhead applications to avoid runs, drips and sags. Excessive thickness does not negatively impact the material properties.

Recommended Proportioners	
Graco	Reactor E-XP2 Reactor H-XP2 Reactor H-XP-3

Recommended Spray Gun Configuration		
Graco	Fusion AP	AR/AF 2929
		AR/AF 3737
		AR/AF 4242
	Fusion MP	MR/MF 3535
		MR/MF 4747
	Probler P2	00 - 02

Recommend Equipment Operating Parameters	
A Side Primary Heat	160˚F
B Side Primary Heat	130-140˚F
Hose Heat	160-170˚F
Dynamic Pressure	1,800—2000 psi
Dynamic Pressure Differential	< 300 psi
Inlet Pressure	> 90 psi

Application and Service Conditions

Environmental & Substrate Conditions

Substrate temperatures must be greater than -20°F. Lower substrate and ambient temperatures will increase the cure time.

Do not install over damp, wet or saturated substrates. Concrete and masonry substrate moisture shall be less than 5% when measured with a Tramex CME meter or equal. If the substrate is below freezing, traditional methods of determining moisture content are not effective. Additional steps should be taken to validate moisture readings.

The substrate must be 5°F above dew point and rising before application of coating materials.

Service Temperatures (Temperature Resistance):

Dry temperature resistance is -40°F to 250°F.

Limitations:

VersaFlex VF 280 is not recommended for direct contact with extremely high or low pH chemicals.

VF 280 is an aromatic based polyurea. Discoloration from exposure to ultraviolet light may occur without affecting the performance characteristics.

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Curing Schedule, Re-Coat Windows and Top Coats

Cure Time

Return to service is determined by ambient temperature, the service environment and exposures. Foot and light vehicle traffic can typically be allowed within 2 hrs. Full cure is achieved in 14 days at 72°F.

Top Coating

VF 280 can be built to thickness or touched up immediately during application. **VF 280** may be top-coated with non-solvent based coatings after curing in 30 minutes. Consult VersaFlex Technical Services for more information on available top coats, coatings systems and application recommendations.

Recoat Time

VF 280 can be recoated up to 24 hours after application at 72°F. Warmer temperatures will reduce the re-coat window. If the re-coat window is exceeded, additional preparation is required. Before recoating, **VF 280** shall be clean, dry, and free of all dirt, dust, debris, contamination or deleterious material. Use **Raven 161** or **VersaFlex Tack Coat** as a re-activating adhesion promoter.

Cleanup and Safety

Cleanup

Cured product may be disposed of without restriction. Excess material should be mixed and allowed to cure and disposed of in a normal manner. Product containers that are "drip-free" may be disposed of according to local, state, and federal laws.

Caution: VersaFlex VF 280 contains isocyanate. All safety precautions must be followed including proper skin protection and breathing protection. Consult SDS for appropriate safety suggestions.

Safety

Read, understand, and follow all recommendations on the SDS. Review SDS at www.versaflex.com

Wash thoroughly after handling, and before eating, drinking or smoking. Have proper First Aid and PPE on site prior to opening or processing the material. Use chemical safety glasses or goggles with splash shields. Use impervious body coverings including long sleeve clothing and boots. Use neoprene or nitrile chemical resistant gloves. Use a combination particulate filter and organic vapor respirator.

Packaging, Handling and Storage

VF 280 is available in **10-gallon, 110-gallon**, and **530-gallon kits**. The containers are filled by weight.

Shelf Life and Storage

One year from date of shipment, in original, unopened factory containers, stored in a sheltered area between 60°F - 95°F. Seal tightly after use to prevent introduction of moisture laden air. Store open 'A' side with a nitrogen cap after each use.

Warranty

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.

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.