VF 502

Hybrid Polyurethane/Polyurea

Technical Data Sheet

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Selection & Specification Data

Description

VersaFlex VF 502 "Hybrid" Polyurea is a fast set, rapid curing, 100% solids, flexible, two-component polyurethane/polyurea elastomer spray coating material. VF 502 was developed for use in high-pressure spray equipment and is used by itself or in combination with other materials to produce a protective coating on metal, concrete, aluminum, and composite substrates. **VF 502** creates an extremely tough film at all thicknesses and can produce films from 10 mils to 250 mils without visible sag or runs in single or multiple pass applications. This material is relatively moisture and temperature insensitive, allowing use in the most problematic ambient conditions.

Ideal for:

- Foam and asbestos encapsulation
- Secondary containment
- Geotextile liners
- Water and wastewater storage ponds
- Landfills
- Solid and organic waste processing facilities

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 502 is an aromatic polyurea and discoloration from exposure to ultraviolet light may occur, however the physical properties are unaffected. **VF 502** should not be used for direct contact with extremely high or low pH levels.

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

Description	Method	Result
VOC	Theoretical	**0 %**
Solids Content	Theoretical	**100 %**
Gel Time	ASTM D1640	**2-3 seconds**
Tack Free Time	ASTM D1640	**3-4 seconds**
Tensile Strength (psi)	ASTM D638	**2814**
Tensile Elongation (%)	ASTM D638	**146%**
Tear Strength (lb./in)	ASTM D624	**276**
Hardness, Shore D	ASTM D2240	**55**
100% Modulus	ASTM D638	**2328**
Free Film Shrink	Internal Test	**0.73%**

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 502 is designed for a variety of substrates and applications. Application method, substrate roughness, profile, and porosity will effect 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

Prior to 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 less than 5% maximum moisture content 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 in accordance with 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 more information on additional substrates.

Recommended Primers	
Concrete & Masonry	VF-20 VF-15 Raven 175 Raven 171FS
Carbon Steel (Optional)	PW-1 AquataPoxy 190
Non-Ferrous Metals	PW-1
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 502 must be installed using plural component, direct impingement mix application equipment.

Recommend Equipment Operating Parameters	
A Side Primary Heat	160˚F
B Side Primary Heat	160˚F
Hose Heat	160˚F
Dynamic Pressure	2,000—2500 psi
Dynamic Pressure Differential	< 200 psi
Inlet Pressure	> 90 psi

- 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 achieve material properties.
- Additional equipment manufacturers and set-ups are acceptable.

Recommended Proportioners	
Graco	Reactor E-XP2 Reactor H-XP2

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

Apply in a uniform manner to desired thickness. Application 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.

Application and Service Conditions

Environmental & Substrate Conditions

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

Do not install over damp, wet, or saturated substrates. Concrete and masonry substrate moisture content 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:

VF 502 is not recommended for direct contact with extremely high or low pH chemicals.

VF 502 is an aromatic based polyurea. Discoloration from exposure to ultraviolet light may occur without affecting the performance characteristics.

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Curing Schedule, Recoat 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 502 can be built to the desired thickness or touched up immediately during application. **VF 502** may be top-coated with non-solvent based coatings after curing for 30 minutes.

Recoat Time (Maximum)

VF 502 can be recoated up to 3 hours after the initial application. If the recoat window is exceeded, additional preparation is required. Before recoating over **VF 502,** the surface shall be clean, dry, and free of all dirt, dust, debris, and other contamination. Mechanical scarification and the use of **VersaFlex Tack Coat or Raven 161** as a re-activating adhesion promoters are recommended.

Clean Up & Safety

Cleanup

Cured product may be disposed of without restriction. Excess liquid 'A' & 'B' material should be mixed together and allowed to cure, then disposed of in the normal manner. Product containers that are "drip free" may be disposed of according to local, state, and federal laws.

Safety

Consult the Safety Data Sheet (SDS) at www.versaflex.com for information concerning health and safety before using. Strictly follow all notices on the SDS and container label. If you do not fully understand the notices and procedures provided on the SDS or if you cannot strictly comply with them, do not use this product.

Packaging, Storage and Shelf Life

Packaging

VF 502 is available in **10, 110** and **550-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.

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