



FSS 45DC

Spray Polyurea

Technical Data Sheet

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Selection & Specification Data

Description

VersaFlex FSS 45DC is a 100% solid, fast setting, plural component, polyurea elastomer and high performance coating. **FSS 45DC** is primarily designed for properly prepared concrete and masonry, due to its higher elongation and extended gel time, but will bond tenaciously to steel and other properly prepared substrates. **FSS 45DC** is an economical coatings solution for industrial applications requiring a resilient liner for waterproofing and/or abrasion resistance. **FSS 45DC** can be applied horizontally, vertically, and overhead, making it ideal for industrial applications with a variety of substrates, and complex geometries.

Ideal For

- Below grade waterproofing
- Wastewater facilities
- Concrete and masonry secondary containment
- Washout facilities
- Food processing, bottling and canning facilities
- Mining facilities

Advantages

- Made in the USA at a ISO 9001:2015 Certified Facility
- 100% solid, no VOC's
- Tough, resilient, elastomeric membrane
- Fast return to service
- Dry exposure range of -20°F to 250°F
- Excellent adhesion to concrete, masonry, and metals
- Meets FDA 21CFR 175.300

Color & Stability (Limitations)

Standard colors are White (VF1213), 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

FSS 45DC is an aromatic polyurea and discoloration from exposure to ultraviolet light may occur, however the physical properties are unaffected. **FSS 45DC** 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 (g/l)	Theoretical	0
Solid Content	Theoretical	100%
Gel Time	ASTM D1640	~30 sec.
Tack Free Time	ASTM D1640	~60 sec.
Light Traffic	ASTM D1640	120 min.
Tensile Strength	ASTM D638	1,635psi
Elongation	ASTM D638	368%
100% Modulus	ASTM D638	1,009 psi
200% Modulus	ASTM D638	1,238 psi
300% Modulus	ASTM D638	1,482 psi
Die C Tear Strength	ASTM D624	371 pli
Shore D Hardness	ASTM D2240	45
Adhesion to Steel	ASTM D4541	> 500 psi
Adhesion to Concrete	ASTM D7234	> 200 psi

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

FSS 45DC 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.
High Abrasion Service:	100-125 mils dft.



Substrate and Surface Preparation

General

Prior to coating, the substrate must be prepared in a manner that provides a uniform, clean, sound, 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.

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 or greater.

Non-Ferrous Metals

Reference SSPC SP-16 Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals. Only use non-metallic blast media.

Recommended Primers

Concrete & Masonry	VF-20
	VF-15
	Raven 175
	Raven 171FS
Ferrous Metal (Optional)	PW-1
	AquataPoxy 190
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.

Contact VersaFlex Technical Service for more information and recommendations.

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 1/3 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.



Application and Equipment Guidelines

General

VersaFlex FSS 45DC 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. Contact VersaFlex Technical Services for additional information and recommendations.

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	XR/XF 3535
		XR/XF 4747
	Probler P2	00 - 02

Apply in a uniform manner to desired thickness. Lift 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 & Service Conditions

Environmental & Substrate Conditions

Substrate temperatures must be greater than -20°F. Lower substrate and ambient temperatures will reduce ultimate 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. If the substrate is below freezing, tradition 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 FSS 45DC is not recommended for direct contact with extremely high or low pH chemicals.

Refer to the VersaFlex Chemical Resistance Technical Bulletin or contact Technical Services for more information and recommendations.

FSS 45DC 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	
<p>Cure Time</p> <p>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.</p> <p>Top Coating</p> <p>VersaFlex FSS 45DC can be built to thickness or touched up immediately during application. FSS 45DC may be top-coated with non-solvent based coatings after curing for 30 minutes.</p>	<p>Re-coat Time</p> <p>VersaFlex FSS 45DC can be re-coated up to 24 hrs. after application at 72°F. Warmer temperatures will reduce the re-coat window. If the re-coat window is exceeded, additional preparation is required. Prior to coating FSS 45DC shall be clean, dry, and free of all dirt, dust, debris, contamination, or deleterious material. Use VersaFlex Tack Coat as a re-activating primer.</p>
Cleanup and Safety	
<p>Cleanup</p> <p>Cured product may be disposed of without restriction. Excess material should be mixed together 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.</p> <p>Caution: VersaFlex FSS 45DC contains isocyanate. All safety precautions must be followed including proper skin protection and breathing protection. Consult SDS for proper safety suggestions.</p>	<p>Safety</p> <p>Read, understand, and follow all recommendations on the SDS. Review SDS at www.versaflex.com</p> <p>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.</p>
Packaging, Handling, and Storage	
<p>Packaging</p> <p>FSS 45DC is available in 10-gallon, 30-gallon, 60-gallon, and 110-gallon kits. Containers are filled by weight.</p>	<p>Shelf-Life and Storage</p> <p>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.</p>
Warranty	
<p>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.</p> <p>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.</p>	