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# AquataFlex® 505

## Technical Data Sheet



Certified to  
 NSF/ANSI/CAN 61



### Selection and Specification Data

#### Description

AquataFlex® 505 is a 1A:3B by volume, “Bio-based”, 100% solids, zero V.O.C., Patented “Tri-Hybrid novolac epoxy/polyurethane” coating designed for use in applications that require the increased chemical resistance of an epoxy and the speed of cure that a polyurea provides. AquataFlex 505 is surface tolerant and is hydrophobic to provide excellent waterproofing properties and adhesion. AquataFlex 505 adheres well to properly prepared concrete, steel, aluminum, wood, composites and many other substrates. Contact Technical Services for Chemical Resistance information.

#### Typical Uses

- Concrete or Steel Water/Waste Water Lining
- USDA BioPreferred® certified bio based product
- Primary and Secondary Containment
- NSF /ANSI Standard 61 Potable Water Tanks, Reservoirs, Basins, and Pipes
- Meets AWWA 222
- U.S.D.A. - FSIS Acceptable

#### Color & Stability (Limitations)

The standard colors: Relaxed Khaki

This product is an aromatic polyurethane and is not UV-stable for color or gloss retention. Discolorations and yellowing can and will occur upon exposure to UV (exterior applications). Discoloration or down-glossing does not affect performance. If you require a UV color stable topcoat, please contact Raven Technical Service.

#### Theoretical Coverage Rate

Theoretical coverage is 1604 square feet per gallon at 1 mil DFT. Actual surface coverage will depend on substrate porosity and roughness.

#### Dry Film Thickness

Recommended thickness will vary from 60-300+ mils per coat based on service conditions. NSF/ANSI 61 certified at a maximum dry film thickness of 300 mils DFT.

Recommended Dry Film Thickness	(Typical)
Concrete, New/Smooth:	80-300+ mils DFT.
Concrete, Rough:	100-300+ mils DFT.
Concrete, Resurfaced:	80-300+ mils DFT.
Masonry/Brick:	125-300+ mils DFT.
Masonry/Brick, Resurfaced:	80-300+ mils DFT.
Steel (Carbon):	60-80 mils DFT.

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

Description	Method	Result
Tensile Strength	ASTM D412/638	>2,000 psi
Elongation	ASTM D412/638	>50%
NSF/ANSI 61 Potable Water Certification	ANSI 61.5	Certified for Tanks & Pipe
Pickle Jar	Greenbook 211-2	Pass
Adhesion to Steel	ASTM D4541	>1,500 psi
Taber Abrasion, CS-17 wheel 1KG, 1000 Revs	ASTM D4060	46 mg loss
Die “C” Tear	ASTM D624	175 pli
Water Absorption	ASTM D570	0.17%
Shrinkage	Internal Test	0.1%
Hardness, Shore A	ASTM D2240	95
Hardness, Shore D	ASTM D2240	>50
Viscosity A-Side ( 75°F)	Brookfield	500 - 800
Viscosity B-Side ( 75°F)	Brookfield	1700 - 2200
Moisture Vapor Transmission	ASTM D1653	25 Grams/m <sup>2</sup>
Severe Wastewater Analysis Test (SWAT)	ASTM G210	Pass

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.



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Substrate and Surface Preparation	Primer Recommendations										
<p><b>General</b></p> <p>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 must be free of all contaminants, such as soluble salts, oil, grease, rust, scale or deposits. In general, coating performance is proportional to the degree of surface preparation.</p> <p><b>Steel (Immersion Service)</b></p> <p>Clean the surface prior to surface preparation in accordance with “Solvent Cleaning” (SSPC SP- 1) to remove oil, grease, and other soluble contaminants. Surfaces to be coated should then be prepared according to SSPC SP-10/NACE No. 2 Near-White Metal Blast Cleaning for immersion service. The resulting angular anchor profile shall be 3.0-5.0 mils and be relative to the coating thickness specified.</p> <p><b>Steel (Atmospheric/Non-Immersion Service)</b></p> <p>Visible deposits of oil, grease, or other contaminants shall be removed according to SSPC-SP 1 followed by SSPC SP-6/NACE No. 3 Commercial Blast Cleaning, resulting in a sharp angular anchor profile of 2.5-4.0 mils.</p> <p><b>Ductile Iron Pipe (Atmospheric and Immersion Service)</b></p> <p>All oils, small deposits of asphalt paint and grease shall be removed by solvent cleaning (see NAPF 500-03-01). Abrasive blast to accordance with NAPF 500-03-04. More information on cleaning ductile iron pipe can be found at <a href="http://www.napf.com">www.napf.com</a></p>	<p><b>Concrete &amp; Masonry</b></p> <p>Reference SSPC SP-13/NACE No. 6 Surface Preparation of Concrete. Surfaces must be sound and contaminant-free with a surface profile equivalent to a minimum CSP3 to CSP5 in accordance with ICRI Technical Guideline No. 310.2R-2013. This can generally be achieved by abrasive blasting, shot blasting, high-pressure water cleaning, water jetting, or a combination of methods. The pH of the concrete must be &gt;7.</p> <table border="1" data-bbox="836 772 1516 1157"> <thead> <tr> <th colspan="2">Primers (Suggested)</th> </tr> </thead> <tbody> <tr> <td><b>Concrete</b></td> <td>Raven 175 Raven 171FS VF 20</td> </tr> <tr> <td><b>Carbon Steel (blast holding)</b></td> <td>AquataPoxy 190* Raven 490*</td> </tr> <tr> <td><b>Non-Ferrous Metals</b></td> <td>AquataPoxy 190*</td> </tr> <tr> <td><b>Tie-Coat Primer</b></td> <td>Raven 161</td> </tr> </tbody> </table> <p>PVC, PE, PP, PS, &amp; HDPE- Contact Raven Tech Service</p> <p>*Do not use this primer if immersion temperatures will exceed 140°F</p>	Primers (Suggested)		<b>Concrete</b>	Raven 175 Raven 171FS VF 20	<b>Carbon Steel (blast holding)</b>	AquataPoxy 190* Raven 490*	<b>Non-Ferrous Metals</b>	AquataPoxy 190*	<b>Tie-Coat Primer</b>	Raven 161
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Mixing and Processing											
<p><b>Mixing:</b></p> <p>B Side component <u>must</u> 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 ½ diameter of the container. Mix for at least 30 minutes prior to processing. Color should be a consistent uniform color without striations.</p>	<p><b>Components &amp; Mix Ratio:</b></p> <p>Mix ratio is 3:1 by volume</p> <p><b>Thinning:</b></p> <p>DO NOT THIN.</p> <p><b>Pre-warming:</b></p> <p>A and B components should be warmed to a minimum of 70°F prior to processing.</p>										



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### Application & Equipment Guidelines

AquataFlex® 505 should be applied using high pressure, heated, plural component equipment that includes an “in-line” static mixing wand (minimum size is 3/8 ID x 24 element). Examples of this equipment include a Graco® Hydracat, XP 50, or XP 70. The mix wand can be positioned close to the spray block or on the spray gun end depending on the desired gel time.

The difference in viscosities requires heating the drums prior to spraying, A-Side and B-Side recirculation is required. The A Side drum should be heated to a minimum of 80°F and the B Side (i.e. Resin) must be heated to a minimum of 120°F prior to spraying.

A drum mixer is required for the B Side (A Side mixing is not required). The B Side material should be well mixed using a folding/unfolding “paddle” type drum mixer.

Care should be taken to use as little whip hose as possible. Do not use whip hose greater than 30ft in length. When pausing in spray application for greater than 60 seconds, one should spray in a 5 gallon bucket to keep material flowing thru the hose. If the spray application is going to stop for more than 60 seconds, the hoses should be flushed immediately using MEK or Acetone in VOC restricted areas.

#### Spray Gun (Suggested)

AquataFlex® 505 can be sprayed thru multiple spray guns. A quality airless gun using a 531 to 535 tip has proven most successful. The 531 tip size allows enough material flow thru the hose to minimize gelation in the whip hose.

### Application & Service Conditions

#### Environmental & Substrate Conditions

Substrate temperatures during application must be greater than 40°F and up to 140°F. The substrate must be 5°F above dew point and rising before application of coating materials.

If the substrate is below freezing, traditional methods of determining moisture content are not effective. Additional steps should be taken to ensure moisture content is less than 5%, when measured with a Tramex CME meter.

#### Service Temperatures

Dry Continuous	-20°F—200°F
Maximum Surge	350°F
Immersion-Max	140°F
Relative Humidity	90% Maximum

Material and equipment temperatures must be kept at 70°F or above. Lower substrate and ambient temperatures will reduce cure time.

### Curing Schedule, Re-Coat Windows, and Top Coats

#### Cure Time

Full cure is achieved in 14 days at 72°F.

#### Top Coating

AquataFlex 506 can be top-coated immediately. Consult Raven Technical Services for more information and product recommendations for UV stable or chemical resistant topcoats. Prior to coating, the surface shall be clean, dry, and free of all dirt, dust, debris, and other contamination. Use VF TackCoat or Raven 161 as adhesion promoters if the recoat window has been exceeded.

#### NSF/ANSI 61 PROCEDURES/REQUIREMENTS

Certified to NSF/ANSI 61 for potable water tanks and pipes. Minimum of 24 hours cure prior to use. AWWA C652 disinfection rinse required before use.

Tank Size	>= 900 gallons
Pipe Diameter	>= 36 inches
Total DFT	300 mils
Cure to Service	24 Hours @ 74°F



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Equipment Clean Up and Safety	
<p><b>Clean Up</b></p> <p>Make certain there is absolutely no epoxy left in the pump. Several gallons of MEK should be flushed thru the equipment prior to loading AquataFlex® 505.</p> <p>Load AquataFlex 505 in the machine and verify that all MEK is purged out. Make certain that there is ample MEK Flush solvent immediately available.</p> <p>Upon completion of spray application, AquataFlex® 505 must be completely purged out of the machine, hoses, and drum pumps. The A Side (isocyanate) will react with moisture or humidity and set up in the filters, hoses, pump balls, and drum pumps within 12 hours if left unattended. Therefore, it is recommended to immediately flush the equipment with a minimum of 2 gallon of MEK for each side and then run several gallons of Raven 950 thru the equipment. Raven 950 should be left in the machine when not in use.</p>	<p><b>Safety</b></p> <p>SDS's are available on the website, (<a href="http://www.ravenlining.com">www.ravenlining.com</a>) or upon request. Consult the Safety Data Sheet for this product concerning health and safety information before using. Strictly follow all notices on the Safety Data Sheet 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. Actual safety measures are dependent on application methods and work environment. Keep uncured product away from children at all times.</p>
Packaging, Shelf Life ,Storage and Disposal	
<p><b>Available Packaging</b></p> <p>AquataFlex 505 is available in 5 gallon pails, 55 gallon drums.</p> <p><b>Shelf Life and Storage</b></p> <p>The product can be stored for six months in factory delivered, unopened drums. Keep away from extreme heat, freezing, and moisture. Proper storage temperature is between 60°F and 95°F.</p>	<p><b>Disposal</b></p> <p>Cured product may be disposed of without restriction. The un-cured isocyanate and resin portions should be mixed together and disposed of in a normal manner. "Drip free" containers should be disposed of according to state, local, and federal laws.</p>
Warranty	
<p><b>Limited Warranty.</b> 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><b>Limitation of Liability.</b> 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>	