

Product Bulletin



Vipel[®] F010-H2O-00 Coating System for Potable Water

TYPICAL PROPERTIES OF CURED RESIN*

| <u>Test</u> | <u>Units of Measure</u> | <u>Nominal</u> | <u>Test Method</u> |
|--|-------------------------|-------------------------------------|--------------------|
| Tensile Strength, | psi/MPa | 12,800/88 | ASTM D 638 |
| Tensile Modulus, | psi/GPa | 460,000/3.2 | ASTM D 638 |
| Tensile Elongation, | % | 6.2 | ASTM D 638 |
| Flexural Strength, | psi/MPa | 22,000/153 | ASTM D 790 |
| Flexural Modulus, | psi/GPa | 500,000/3.5 | ASTM D 790 |
| Heat Distortion Temp. °F/°C @ 264 psi | | 248/120 | ASTM D 648 |
| Barcol Hardness, Ultimate | | 39 | ASTM D 2583 |
| Compressive strength at yield, | psi/MPa | 17,600/121 | ASTM D 695 |
| Glass Transition Temp. | Tg(°F/°C) | 266/130 | DIN 53445 |
| Critical Strain Energy Release Rate (G _{1c}) | J • M ⁻² | 100 | ASTM E 399 |
| Stress Intensity Factor (K _{1c}) | MPa•m ^{1/2} | 0.6 | ASTM E 399 |
| Dielectric Dissipation Factor Dry/ after 24 hrs in drinking water | @ 60 Hz | 2.5/3.7x10 ⁻³ | DIN 53483 |
| | @ 1 KHz | 2.2/3.3x10 ⁻³ | DIN 53483 |
| | @ 1 MHz | 1.6/2.3x10 ⁻³ | DIN 53483 |
| Dielectric Constant Dry/ after 24 hrs in drinking water | @ 60 Hz | 3.4/3.5 | DIN 53483 |
| | @ 1 KHz | 3.4/3.5 | DIN 53483 |
| | @ 1 MHz | 3.3/3.4 | DIN 53483 |
| Surface Resistivity | ohm | >10 ¹³ | DIN 53482 |
| Volume Resistivity Dry/ after 24 hrs in drinking water | ohm • cm | >10 ¹⁶ >10 ¹⁶ | DIN 53482 |
| | | | |
| Dielectric Strength 0.7mm Specimen Thickness | KV/mm | 120 | DIN 53481 |
| | | | |

POTABLE WATER

NSF/ANSI 61 Certified

Vipel F010-H2O-00 is certified to NSF/ANSI 61 for use in commercial and domestic potable water systems as a protective barrier material. If fabricators follow the ingredients and process instructions listed on page 3, they do not need to perform additional testing to manufacture a NSF/ANSI 61 compliant coating.

Suitable for Sodium

Hypochlorite Containment

The formulation of Vipel F010-H2O-00 is also appropriate and suitable for sodium hypochlorite (chlorine bleach) containment. Sodium hypochlorite is a widely accepted water purification chemical that is very aggressive to most metals and many polymeric materials. The use of coatings that are not formulated for sodium hypochlorite containment will reduced the service life of the equipment.

Corrosion Resistant

Vipel F010-H2O-00 highly resistant to hydrogen peroxide, and alkalis, and performs well in various stages of hypochlorite and chlorine production. Refer to AOC's "Corrosion Resistant Resin Guide" for corrosion resistance information or for questions regarding suitability of a resin to any particular chemical environment contact AOC.

*Typical properties are not to be construed as specifications.



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TYPICAL LIQUID PROPERTIES OF VIPEL F010-H2O RESIN**

| Version | Viscosity, Cps | Thix Index | Gel Time, minutes | Gel to Peak Exotherm, minutes | Peak Exotherm, °F/°C | Specific Gravity | Styrene Content, % |
|--------------------|------------------|------------|-------------------|-------------------------------|----------------------|------------------|--------------------|
| F010-H20-00 | 300 ¹ | NA | 20 ² | 10 | 356/180 | 1.05 | 39 |

NA-Not applicable

- 1) 77°F/25°C Brookfield RV viscosity spindle 2 at 20 rpm
2) 77°F/25°C Gel time 2.5% BPO-40% and 0.35% DEA

BENZOYL PEROXIDE CATALYST (BPO) with DEA ** ***

| Resin Temperature (°F) | | 60s | 70s | 90s |
|------------------------|------------|-----------|-----------|-----------|
| 10 – 20 min. | | 16 | 18 | 13 |
| | BPO-40%, % | 2.5 | 2.5 | 2.5 |
| | DEA, % | 0.5 | 0.35 | 0.3 |
| 20 – 40 min. | | 35 | 30 | 25 |
| | BPO-40%, % | 2.5 | 2.5 | 2.5 |
| | DEA, % | 0.3 | 0.2 | 0.15 |
| 40 – 60 min. | | 44 | 52 | 52 |
| | BPO-40%, % | 2.5 | 2.5 | 2.5 |
| | DEA, % | 0.2 | 0.15 | 0.1 |

**Typical properties are not to be construed as specifications.

*** The gel times shown are typical but may be affected by catalyst, promoter, inhibitor concentration, resin, mold, and shop temperature. Variations in gelling characteristics can be expected between different lots of catalysts and at extremely high humidities. It is recommended that the fabricator check the gelling characteristics of a small quantity of resin under actual operating conditions prior to use.

SYMBOL LEGEND:

DEA - n,n diethylaniline



Certified to NSF/ANSI 61

Vipel® F010-H2O-00 Coating System Certified by NSF International

Requirements for Use of Vipel® F010-H2O-00 in a Coating System Certified by NSF to ANSI/NSF Standard 61, Drinking Water System Components

Vipel F010-H2O-00 is recommended as a coating system in potable water tanks (>=4,000 gal) and piping (>=6" diameter) at ambient temperature

In potable water applications, the following are required of the coating system. Additional, non-specified chemical components or designated components that are utilized outside the percentage limitations specified below, constitutes non-compliance with the NSF Certified Vipel® F010-H2O-00 Coating System. Strict adherence to components and percentages is required.

| <u>Component</u> | <u>Supplier/Manufacturer</u> | <u>Percentage</u> |
|--|---|-------------------|
| F010-H2O-00 | AOC, LLC | 91.5 – 97.4% |
| N,N-Diethyl Aniline (DEA) | Aceto Corp. or Sigma Aldrich | 0.1 -0.6% |
| Benox L-40LV (40% BPO Dispersion) | Syrgis Performance Chemicals | 2.50% |
| Nexus Polyester Veil | Precision Fabrics Group | 5-10% or 2-pplies |
| <u>Optional Ingredients</u> | <u>Supplier/Manufacturer</u> | <u>Percentage</u> |
| Enguard WS-0010 Wax Solution Additive OR 50% Wax Solution in Styrene | Ashland <i>Paraffin Wax:</i> 1231A from International Group Inc., 2250 from Honeywell, or Eskar Wax R-25 from Amoco Oil Co. <i>Styrene:</i> Lyondell, Total Petrochemicals, or Americas Styrenics | 3% Maximum |
| Amorphous Fumed Silica | Cabot Corp. (Cab-o-sil TS-720) or Degussa (R202) | 2.5% Maximum |

Process

Cure Time: 2 – 100 Hours at 65° - 90°F

Post cure: 4 hours at 160°F followed by 2 Hours at 180°F

Wash/Rinse: After post cure, composite must be washed with a non-ionic detergent solution and rinsed with potable water.

The F010-H2O-00 Coating System is Certified by NSF International to the requirements of NSF/ANSI Standard 61: Drinking Water System Components-Health Effects. This certification is non-transferable. Certain jurisdictions may require certain end products to be coated with an NSF Certified coating system, while other jurisdictions may require certain end products to be Certified to NSF 61. If you would like information regarding NSF Certification, please contact NSF International at info@nsf.org; www.nsf.org; or at 1-800-NSF-MARK.



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SAFETY

See appropriate Material Safety Data Sheet for guidelines.

ISO 9001:2008 CERTIFIED

The Quality Management Systems at every AOC manufacturing facility have been certified as meeting ISO 9001:2008 standards. This certification recognizes that each AOC facility has an internationally accepted model in place for managing and assuring quality. We follow the practices set forth in this model to add value to the resins we make for our customers.

STORAGE STABILITY

Vipel F010-H2O-00 products are stable for 6 months from the date of manufacture when stored in original containers, away from direct sunlight or other UV light sources at or below 77°F (25°C).

STORAGE STABILITY continued

Storage stability of two months or less should be anticipated if the storage temperature exceeds 86°F (30°C).

After extended storage, some drift may occur in the product viscosity and gel time.