ESSENTIAL R6010

SELF CROSS-LINKING WATERBORNE ACRYLIC/URETHANE POLYMER

Essential R6010 can be formulated into topcoats for wood flooring and furniture.

R6010 can be formulated to pass MFMA criteria for water-based wood finishes. Essential R6010 has exceptional durability, chemical, mar and scuff resistance that rivals typical solvent-borne oil-modified urethanes.

R6010 formulations can pass the boiling water/ceramic mug test, so it is an ideal candidate as a wood furniture topcoat for industrial applications or the DIY market.

Essential R6010 offers the ability to formulate coatings to less than 250 g/l VOC.

<table>
<thead>
<tr>
<th>KEY BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• One package, self cross-linking</td>
</tr>
<tr>
<td>• Exceptional chemical resistance</td>
</tr>
<tr>
<td>• Outstanding mar and scuff resistance</td>
</tr>
<tr>
<td>• Excellent water resistance</td>
</tr>
<tr>
<td>• Hot tire pick-up resistance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPICAL PROPERTIES*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance .......... Off-White Emulsion</td>
</tr>
<tr>
<td>pH .................. 8.0</td>
</tr>
<tr>
<td>Solids, % by Weight .......................... 34.0</td>
</tr>
<tr>
<td>Solids, % by Volume ......................... 31.7</td>
</tr>
<tr>
<td>Viscosity, cP @ 25°C - Brookfield, LV2, 60rpm .............. 25</td>
</tr>
<tr>
<td>Density, Lbs./Gal. .................................. 8.7</td>
</tr>
<tr>
<td>VOC Level (As Supplied) Lbs./Gal. .......................... 1.04</td>
</tr>
<tr>
<td>G/L ........................................ 125</td>
</tr>
<tr>
<td>MFFT, °C ................................. 23</td>
</tr>
<tr>
<td>Freeze/Thaw Stable .... Passes 3 Cycles</td>
</tr>
</tbody>
</table>

*These values should not be interpreted as specifications.

DISCLAIMER: The information and recommendations contained herein are based on data believed to be correct. The information is offered solely for the customer’s consideration, investigation and verification because of numerous factors beyond our control affecting the results of the use of products, Essential Industries, INC. makes no warranty of any kind, expressed or implied, including those of merchantability and fitness for a particular purpose, other than that the product conforms to its applicable current standard specification. The manufacturer’s only obligation shall be to replace such quantity of the product proven to be defective.
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SELF CROSS-LINKING WATERBORNE ACRYLIC/URETHANE POLYMER

Starting Point Formulations

Essential R6010 – Gloss Formulation

<table>
<thead>
<tr>
<th>MATERIALS</th>
<th>POUNDS</th>
<th>GALLONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESSENTIAL R6010</td>
<td>761.8</td>
<td>87.36</td>
</tr>
</tbody>
</table>

Premix Next Five Items:

- Water: 40.0 - 4.80
- Dowanol® DPM: 27.0 - 3.40
- Dowanol® DPNB: 27.0 - 3.57
- Tego® Foamex 800: 4.5 - 0.52
- Acrysol® RM-825: 3.0 - 0.35

Total: 863.3 - 100.00

Essential R6010 – Semi-Gloss Formulation

<table>
<thead>
<tr>
<th>MATERIALS</th>
<th>POUNDS</th>
<th>GALLONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESSENTIAL R6010</td>
<td>750.0</td>
<td>86.01</td>
</tr>
<tr>
<td>Water</td>
<td>48.5</td>
<td>5.82</td>
</tr>
<tr>
<td>Dowanol® DPM</td>
<td>27.0</td>
<td>3.40</td>
</tr>
<tr>
<td>Dowanol® DPNB</td>
<td>27.0</td>
<td>3.57</td>
</tr>
<tr>
<td>Acematt® TS-100</td>
<td>4.0</td>
<td>0.22</td>
</tr>
<tr>
<td>Tego® Foamex 800</td>
<td>4.5</td>
<td>0.52</td>
</tr>
<tr>
<td>Acrysol® RM-825</td>
<td>4.0</td>
<td>0.46</td>
</tr>
</tbody>
</table>

Total: 865.0 - 100.00

Formulation Attributes

- Solids, % by Weight: 30.2
- Solids, % by Volume: 27.6
- Viscosity, Seconds (Zahn Cup#2): 30
- pH: 8.0
- Density: 8.6
- Calculated VOC (Excluding Water):
  - Lbs./Gal.: 2.25
  - G/L: 269

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Merton, WI 53056-0012
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www.essentialpolymers.com
Performance Information
All tests were performed on coatings kept at 77°F and 50% RH for seven days.

Tensile Strength, PSI ...................................................... 1600
Elongation at Break, % ...................................................... 200

Tests Performed on Aluminum Panels (1-Mil Dry Films)
Konig Hardness (Seconds) 1 Day, 7 Day ......................... 54, 83
Grit Feed Taber Abrasion (Mg Loss, 500 Cycles, 1000g) ........ 28

Tests Performed on Maple Veneer (3 Coats, 1-Mil Dry Per Coat)
1 Hour Covered Spot Test

Water ................................................................. No Effect
Soda ................................................................. No Effect
Beer ....................................................................... No Effect
Formula 409 ...................................................... Slight Film Damage
100% Ethanol .......................................................... Softening, Full Recovery
50% Ethanol .......................................................... Slight Softening, Full Recovery
70% Isopropyl Alcohol .............................................. Softening, Full Recovery

Test performed on Oak panel (3 coats, 1 Mil Dry Per Coat). Water at 100°C is dripped on panel and ceramic coffee mug containing water initially at 100°C is placed on top of water spot for 20 minutes.

Boiling Water/Hot Ceramic Mug ......................... No visual damage

Supplier Information

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essential R6010</td>
<td>Polyurethane Dispersion</td>
<td>Essential Polymers</td>
</tr>
<tr>
<td>Acrysol® RM -825</td>
<td>Thickener</td>
<td>Dow Chemical</td>
</tr>
<tr>
<td>Dowanol® DPM</td>
<td>Solvent</td>
<td>Dow Chemical</td>
</tr>
<tr>
<td>Dowanol® DPNB</td>
<td>Solvent</td>
<td>Dow Chemical</td>
</tr>
<tr>
<td>Tego® Foamex 800</td>
<td>Defoamer</td>
<td>Evonik Industries</td>
</tr>
<tr>
<td>Acematt® TS-100</td>
<td>Matting Agent</td>
<td>Degussa</td>
</tr>
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