POLYURETHANE COATING – UP-450

**Specification Data**

**Type**  
A two-pack, high-solids colored coating based on acrylic polyol resin with non-yellowing polyisocyanate hardener.

**Uses**  
Used for wooden, metal, FRP products and steel structures such as ships, vehicles, bridges, oil refineries, power stations, pulp factories, chemical plants etc.

**Characteristics**  
- High gloss and excellent appearance.
- Excellent weather resistance with gloss and color retention.
- Excellent resistance to chemicals.
- Excellent adhesion, hardness, flexibility and abrasion resistance.

**Color**  
A broad range of colors is upon customer request.

**Finish**  
Gloss

**VOC values**  
336 g/L, use No.736 thinner to thin up 5% (378 g/L) or 15% (445 g/L).

**Volume Solids**  
Above 57%

**Theoretical Coverage**  
36 m²/Gal  9.5 m²/L  6.8 m²/Kg  (DFT :2.4 mils)

**Dry Film Thickness**  
1.6~3.2 mils per coat.  
Dry film thickness in excess of 3.2 mils (80 microns) per coat is not recommended

**Service Temperature**  
Continuous : 200°F  Non-Continuous :250°F

**Preceding Coats**  

**Performance Data**

<table>
<thead>
<tr>
<th>Test Method</th>
<th>System</th>
<th>Results</th>
</tr>
</thead>
</table>
| ISO 4628-6-07 Cyclic Corrosive Test  | Blasted Steel  
1 ct. IZ-01 (75 microns)  
1 ct. EP-999GF (150 microns)  
1 ct. UP-450 (60 microns)  | Chalking rating : 0.5  
Original adhesive strength : 5.2 MPa  
Percentage of adhesive strength retention after cyclic corrosive test : 62.9%(3.27 MPa)  |
| ASTM F963 Soluble Heavy Metals Test  | 1 ct. UP-450  | n.d.(Sb · As · Cd · Cr · Pb · Hg · Se)  |
| CNS 15200-5-3 Flexibility  | 1 ct. UP-450  | No cracking and peeling on film  |
| CNS 15200-7-6 Impact resistance  | 1 ct. UP-450  | No cracking and peeling on film  |
| CNS 15200-5-6 Adhesiveness between layers  | 1 ct. EP116  
1 ct. UP-04 PU intermediate  
1 ct. UP-450  | No abnormality  |
| CNS 15200-6-1 Alkali resistance  | 1 ct. EP116  
1 ct. UP-04 PU intermediate  
1 ct. UP-450  | No abnormality  |
| CNS 15200-6-1 Acid resistance  | 1 ct. EP116  
1 ct. UP-04 PU intermediate  
1 ct. UP-450  | No abnormality  |

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Humidity and cool-heat cycling resistance

<table>
<thead>
<tr>
<th>CNS 15200-7-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ct. EP116</td>
</tr>
<tr>
<td>1 ct. UP-04 PU intermediate</td>
</tr>
<tr>
<td>1 ct. UP-450</td>
</tr>
</tbody>
</table>


Accelerated weather resistance

<table>
<thead>
<tr>
<th>CNS 15200-7-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ct. EP116</td>
</tr>
<tr>
<td>1 ct. UP-04 PU intermediate</td>
</tr>
<tr>
<td>1 ct. UP-450</td>
</tr>
</tbody>
</table>


Test reports and additional data available upon written request.

Certification

- Norsok M-501-04 : Report number KV-12-08801XA-1 (SGS Taiwan Ltd.)
- CNS15665 K2247(2013) : Report number 140826373-1 (Taiwan Paint Industry Association)

Application Instruction

- Surface preparation
  - **General**
    - Remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating. Surfaces must be clean and dry. Moisture, grease, sludge, dust, corrosive salt must be thoroughly cleaned from substrate.

- **Primed Surfaces**
  - UP-450 should always be applied over a recommended anti-corrosive coating scheme. The primer surface should be dry and free from all contamination and UP-450 must be applied within the overcoating intervals specified (consult the relevant product data sheet).

- **Areas of Breakdown and Damage**
  - It should be prepared to the specified standard (Sa2 1/2 (ISO 8501-1:2007) or SSPC-SP6, Abrasive Blasting or SSPC-SP11, Power Tool Cleaning) and patch primed prior to the application of UP-450.

- Mixing & Thinning
  - **Mixing**
    - Mix base and hardener according to the mixing ratio and stir thoroughly.
  - **Thinning**
    - Use PU Thinner (No.736) to thin up 5-15%.
  - **Mixing Ratio**
    - Base : Hardener = 88 : 12 (by weight)
  - **Pot life**
    - 3 hours at 25°C (mixture, 77°F)

- Equipment
  - **Spray Application**
    - Avoid applying the paint in rainy or humid weather (the moisture above 85% RH), otherwise the adhesion will be affected by moisture of substrate and the paint film will be loss its gloss. All equipment must be cleaned immediately after use. When overcoating interval is exceeded, paint surface must be roughened to ensure adhesion. Hardener cover must be tightly closed to avoid reaction with moisture in air to form bubbles and gelation.
  - **Airless Spray**
    - Pump ratio : 30:1 or greater
  - **Tip size** : 0.015"~0.019"
  - **Output PSI** : 2100~2500
  - **Brush**
    - Application by brush is applicable. For special condition please consult with product manufacturer.
  - **Roller**
    - Application by brush is applicable. For special condition please consult with product manufacturer.

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http://www.rainbowpaint.com.tw
FAX:886-7-8715443
- **Environment conditions**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Coating</th>
<th>Surface</th>
<th>Environment</th>
<th>Humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>20<del>30°C(68°F</del>86°F)</td>
<td>20<del>30°C(68°F</del>86°F)</td>
<td>20<del>30°C(68°F</del>86°F)</td>
<td>30~55%</td>
</tr>
<tr>
<td>Minimum</td>
<td>5°C(41°F)</td>
<td>5°C(41°F)</td>
<td>5°C(41°F)</td>
<td>0%</td>
</tr>
<tr>
<td>Maximum</td>
<td>35°C(95°F)</td>
<td>42°C(108°F)</td>
<td>42°C(108°F)</td>
<td>85%</td>
</tr>
</tbody>
</table>

Industry standards are for substrate temperatures to be 3°C(5°F) above the dew point. The product simply requires the substrate temperature to be above the dew point.

**Caution**: This product is moisture sensitive in the liquid stage and until cured. Protect from high humidity, dew and direct moisture contact until cured. Application and/or curing in humidities above maximum, or exposure to moisture from rain or dew may result in a loss of gloss and/or microbubbling of the product.

- **Curing Schedule**

<table>
<thead>
<tr>
<th>Surface Temp. &amp; 50% Relative Humidity</th>
<th>Dry to Handle</th>
<th>Dry to Recoat &amp; Topcoat</th>
</tr>
</thead>
<tbody>
<tr>
<td>5°C (41°F)</td>
<td>18 hours</td>
<td>18 hours</td>
</tr>
<tr>
<td>15°C (59°F)</td>
<td>10 hours</td>
<td>10 hours</td>
</tr>
<tr>
<td>25°C (77°F)</td>
<td>4 hours</td>
<td>4 hours</td>
</tr>
<tr>
<td>35°C (95°F)</td>
<td>1.5 hours</td>
<td>1.5 hours</td>
</tr>
</tbody>
</table>

- **Cleanup & Safety**

**Cleanup**: Use PU Thinner (No.736) to clean. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

**Safety**: Please read and follow all caution statements on this product data sheet and MSDS for this product.

**Ventilation**: Proper ventilation and protective measures must be provided during application and drying to keep solvent vapor concentrations within safe limits and to protect against toxic or oxygen deficient hazards.

- **Package, Handling & Storage**

**Shelf Life**: Part A: Minimum 2 years under normal storage conditions
Part B: Minimum 1 years under normal storage conditions

**Shipping**: Part A: 1 Gallon - 4.94kg 5 Gallon - 24.1kg
Part B: 1 Gallon - 0.74kg 5 Gallon - 3.3kg

**Weight**: Part A - 5-35°C (41-95°F)
Part B - 0-90% Relative Humidity

**Flash Point**: Part A: 25°C (77°F)
Part B: 47°C (116°F)

**Storage**: Store in dry, shaded conditions away from sources of heat and ignition.