MetalTec

COMPOSITE HIGH PERFORMANCE COATINGS

ASTM Test Results Update

This list summarizes and confirms the attached public and private agency ASTM performances test report excerpts of our MT-Urethane coatings:

1. **Adhesion** per ASTM D4541 :
   Bureau of Reclamation : 100% intercoat and intracoat adhesion after 3000 hours
   Toray Industries : > 500 LBF/m² (> 3.448 kpa)
   TSL Inc : Tape Adhesion (ASTM D-3359): 5A
   Metaltec : 500-1000 Lbf/m²
   Powertech Labs, Inc (ASTM D-3359): 5
2. **Adhesion** per ASTM D-4541 ISO 1521 (following 3080 hours immersion in salt water and deionized water)
   Bureau of Reclamation : > 125 Lbf.m² (> 862 Kpa)
   Metaltec: 500-1000 Lbf/m²
3. **Taber Abrasion** (CS 17 wheels) ASTM 4060-90
   Metaltec: < 34-40 mg loss
   Oklahoma DOT: < 30 mg loss
   Toray Industries: < 45 mg moss
4. **Cathodic Protection** ASTM G8 (disbondment after 30 days)
   No official report has been made, however, the US Bureau of reclamation indicates that after 3000 hours immersion, elcometer pull readings per ASTM D-4541 indicate no loss or delamination (disbondment), and less than 125 Lbf/m² adhesion strength.
5. **Gardner Impact**, ASTM D-2794-90
   Powertech Lab, Inc: 140 ins/Lbs
   Metaltec: 150 ins/Lbs
   Toray Industries: 150 ins/Lbs
6. **Barcol Hardness**:
   Powertech Labs, Inc: Pencil: 2H;Automatic scratch (Kg): >10.0
7. ASTM B-117 **Salt Spray**
   Metaltec: 18000
   TSL, Inc: perfect score of 10 to 5000 hours exposure
   Oklahoma DOT: passes 5000 hours
   ASTL D-610 **Rust Ratings**:
   Georgia DOT: Salt Fog exposure : rated #2 of 10 systems tested
   Marine exposure: rated #1 of 10 systems tested
   Industrial exposure: rated #1 of 10 systems tested
   Overall ranking: #1 of 10 systems tested
   Oregon DOT: rated #1 of 10 systems tested on a 6-year, coastal field evaluation for salt-fog resistance.
   Bureau of Reclamation: passed 3000+ hours (ASTM D-610)
8. **Tidal immersion** (only field-test results available as references)
   7-year sheet piles at Cominico Mines in Alaska : Winter application, using ice-flow scaffolds. Still in remarkable condition.
   Oregon DOT: Painted failed coal-tar epoxy pipe-pilings in Oregon coast tidal zone 2 years ago (failed areas only); 2 years later, remaining coal tar epoxy failed; Metaltec has been specified as replacement material (2 year-old Metaltar PUF looks brand new).
9. **Flexibility** :
   US Bureau of Reclamation: (1° mandrel bend) passes with small cracking only (after 3000 hours salt water an deionized water immersion)
   Metaltec: passes ½" mandrel
   Toray Industries: passes ½" mandrel bend