Hear Ye, Hear Ye!!!
Update on Standards Related to the Polyurea Technology

Dudley J. Primeaux II, PCS, CCI
Social Media……

• Facebook

• LinkedIn

• Twitter
  • #polyurea #polyureaspray #really?????

• And so forth.......
Specifications

Vs

Standards
What are Specifications?

“What specifications are a load assumed with bravado, borne with groans, and shifted, when they can be shifted, universally without regret. The architect who is not a specialist in writing them, is apt to look on them as a quasi-magic formulae, which he [sic] does not fully understand nor really care to understand but repeats dutifully and wearily, as a ritual handed down to him by wiser men.”

From *Ready Written Specifications*, Leicester B. Holland and Harry Parker (1926)
What are Specifications?

- Instructional **LEGAL document** on how to proceed with a coating / lining installation – **Work Results**!
- Typically prepared by an architect or engineer specializing in that type work
- Often prepared by the polyurea coating / lining system supplier
- Basically a cookbook / recipe for successful polyurea coating / lining installation!
- Project specific document
- May be prepared by the contractor!
Specification Purpose?

- A specific / desired polyurea coating / lining project
- Assures quality / proper polyurea materials and workmanship – keeps all on “same page”
- Assure timely completion of work; avoid delays / disputes
- Insure accurate or reasonable costs for the work
- Inhibit costly change orders or claims, maximize profit
- Assures for all safety, environmental and legal requirements
- To assure that the polyurea coating / lining system is applied to the correct areas of the project
- It’s NOT Product Selection!!!!

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September 10 – 12, 2018
What are Industry Specifications?

• Need to have proper communication
  • Computer “cut & paste” procedure - careful
• Have to be written correctly
  • Shall be read before undertaking project!
  • Shall be followed – rules / “law”
• Use Industry Standards!
  • Performance information related to project / use
What are Industry Standards?

• Consensus documents from Industry Representation
  • Owners, suppliers, users, inspectors, etc
• Application Standards
• Performance Based Standards
  • Establish minimum performance criteria
  • Can be related to a specific industry / application
• They refer to ASTM, ISO, API, NACE, ICRI, ACI, ISO & others
What are Industry Standards?

• Help us insure and support that the right technology, performance and process is being used for successful application work

• Not just about the “technology” or a product
Pinholes!!!!

• Know issue at the time of application of spray polyurea (thermoset) materials

• What is acceptable???

• Any **standard** reference???
  • Novel idea......

• Well glad you asked......
Pinholes!!!!!

<table>
<thead>
<tr>
<th>Classification</th>
<th>Number of Pinholes per Evaluation Spot</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0 pinholes</td>
</tr>
<tr>
<td>Low</td>
<td>1 to 10 pinholes</td>
</tr>
<tr>
<td>Moderate</td>
<td>11 to 20 pinholes</td>
</tr>
<tr>
<td>High</td>
<td>&gt; 20 pinholes</td>
</tr>
</tbody>
</table>

Evaluation Spot = 1 ft\(^2\) (0.1 m\(^2\))

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## Pinholes!!!!!

<table>
<thead>
<tr>
<th>Classification</th>
<th>Service Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Interior atmospheric coatings applied to areas such as medical, food, drug or</td>
</tr>
<tr>
<td></td>
<td>pharmaceutical clean rooms, or areas frequently wet or washed down</td>
</tr>
<tr>
<td></td>
<td>Immersion coatings</td>
</tr>
<tr>
<td></td>
<td>Floor coatings</td>
</tr>
<tr>
<td>Moderate or less</td>
<td>Atmospheric coatings applied to interior surfaces in general areas</td>
</tr>
<tr>
<td></td>
<td>Atmospheric coatings applied to exterior surfaces in general areas</td>
</tr>
</tbody>
</table>
Did you know, there are 2 important standards related to application Dry Film Thickness??

• SSPC-PA 2, Coating Application Standard No. 2
  • Procedure for Determining Conformance to Dry Coating Thickness Requirements

• SSPC-PA 9, Paint Application Specification No. 9
  • Measurement of Dry Coating Thickness on Cementicious Substrates Using Ultrasonic Gages
# Applied Film Thickness - DFT

## SSPC-PA 2

### Table 1
**Coating Thickness Restriction Levels**

<table>
<thead>
<tr>
<th>Thickness</th>
<th>Gage Reading</th>
<th>Spot Measurement</th>
<th>Area Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>Unrestricted</td>
<td>As specified</td>
<td>As specified</td>
</tr>
<tr>
<td>Maximum</td>
<td>Unrestricted</td>
<td>As specified</td>
<td>As specified</td>
</tr>
<tr>
<td><strong>Level 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>Unrestricted</td>
<td>As specified</td>
<td>As specified</td>
</tr>
<tr>
<td>Maximum</td>
<td>Unrestricted</td>
<td>120% of maximum</td>
<td>As specified</td>
</tr>
<tr>
<td><strong>Level 3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>Unrestricted</td>
<td>80% of minimum</td>
<td>As specified</td>
</tr>
<tr>
<td>Maximum</td>
<td>Unrestricted</td>
<td>120% of maximum</td>
<td>As specified</td>
</tr>
<tr>
<td><strong>Level 4</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>Unrestricted</td>
<td>80% of minimum</td>
<td>As specified</td>
</tr>
<tr>
<td>Maximum</td>
<td>Unrestricted</td>
<td>150% of maximum</td>
<td>As specified</td>
</tr>
<tr>
<td><strong>Level 5</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>Unrestricted</td>
<td>80% of minimum</td>
<td>As specified</td>
</tr>
<tr>
<td>Maximum</td>
<td>Unrestricted</td>
<td>Unrestricted</td>
<td>Unrestricted</td>
</tr>
</tbody>
</table>

## SSPC-PA 9

### Table 1
**Restriction Levels**

<table>
<thead>
<tr>
<th>Coating Thickness on Concrete</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level 1</strong></td>
</tr>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>Maximum</td>
</tr>
<tr>
<td><strong>Level 2</strong></td>
</tr>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>Maximum</td>
</tr>
<tr>
<td><strong>Level 3</strong></td>
</tr>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>Maximum</td>
</tr>
<tr>
<td><strong>Level 4</strong></td>
</tr>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>Maximum</td>
</tr>
</tbody>
</table>

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Available Lighting ... Never Thought of That

• Lighting (SSPC Guide 12)
  • **Application:** 20 – 50 footcandles,
    • ~215 to 540 lux
  • **Inspection:** 50 – 200 footcandles,
    • 540 to 2150 lux
Some Current Industry Standards - *Polyurea*

- **SSPC: The Society for Protective Coatings**
  - **Paint Specification No. 39** (SSPC-Paint 39)
    - Two-Component Aliphatic Polyurea Topcoat, Fast or Moderate Drying, Performance-Based
  - **Coating System SSPC-PS 28.01**
    - Two-Coat Zinc-Rich Polyurethane Primer / Aliphatic Polyurea Topcoat System, Performance-Based
  - **Coating Application Standard No. 14** (SSPC-PA 14)
    - Application of Thick Film Polyurea and Polyurethane Coatings to Concrete and Steel Using Plural Component Equipment
  - **Coating Standard No. 43** (SSPC-Paint 43)
    - Direct-To-Metal Aliphatic Polyurea Coating, Performance Based
  - **Coating Specification No. 44** (SSPC-Paint 44)
    - Liquid-Applied Organic Polymeric Coatings and Linings for Concrete Structures in Municipal Wastewater Facilities, Performance-Based
  - **Coating Standard No. 45** (SSPC-Paint 45)
    - Two-Component, Thick-Film Polyurea and Polyurea/Polyurethane Hybrid Coatings, Performance Based
Current Industry Standards – Surface Prep???

• Well what about application / Surface Prep???
Current Industry Standards – Surface Prep???

- **SSPC-SP 5 / NACE No. 1 / ISO 8501-1 Sa 3**
  - White Metal Blast Cleaning - 100% free visible contaminants

- **SSPC-SP 6 / NACE No. 3 / ISO 8501-1 Sa 2** *
  - Commercial Blast Cleaning - free of visible contaminants; shadows and stains allowed on 33% of surface area

- **SSPC-SP 7 / NACE No. 4 / ISO 8501-1 Sa 1**
  - Brush-Off Blast Cleaning - removes loose mill scale, rust and paint

- **SSPC-SP 10 / NACE No. 2 / ISO 8501-1 Sa 2½**
  - Near-White Metal Blast Cleaning - free of visible contaminants; shadows and stains allowed on 5% of surface area

- **SSPC-SP 14 / NACE No. 8**
  - Industrial Blast Cleaning – tightly adhered mil scale, rust and coating allowed on 10% of surface area
Current Industry Standards – Surface Prep??

• But Wait! What shall be done before that????

• **SSPC-SP 1**
  • Solvent Cleaning ("solvent") - removes grease / oil
  • Performed before any power tool or abrasive blasting
  • Remember the universal solvent??
Current Industry Standards – Surface Prep???

• **SSPC-SP 5 (WAB) / NACE WAB-1**
  - White Metal Wet Abrasive Blast Cleaning - 100% free visible contaminates

• **SSPC-SP 6 (WAB) / NACE WAB-3**
  - Commercial Wet Abrasive Blast Cleaning - free of visible contaminants; shadows and stains allowed on 33% of surface area

• **SSPC-SP 7 (WAB) / NACE WAB-4**
  - Brush-Off Wet Abrasive Blast Cleaning - removes loose mill scale, rust and paint

• **SSPC-SP 10 (WAB) / NACE WAB-2**
  - Near-White Metal Wet Abrasive Blast Cleaning - free of visible contaminants; shadows and stains allowed on 5% of surface area

• **SSPC-SP 14 (WAB) / NACE WAB-8**
  - Industrial Wet Abrasive Blast Cleaning – tightly adhered mil scale, rust and coating allowed on 10% of surface area
Current Industry Standards – Surface Prep???

- **SSPC-SP WJ-1, WJ-2, WJ-3 & WJ-4**
  - Replaces SSPC-SP 12 / NACE No. 5 / ISO 8501-4
  - Surface Preparation and Cleaning of Metals by Waterjetting prior to Re-Coating
  - Does NOT create a profile on metals (exposes existing)
  - Removes water soluble salts, rust, coatings, oil / grease
  - 4 grades of cleanliness

**HP WJ** (High-Pressure Water Jetting)
10,000 - 30,000 psi (69 – 207 MPa) water

**UHP WJ** (Ultra High-Pressure Water Jetting)
> 30,000 psi (>207 MPa) water
Current Industry Standards – Surface Prep???

• **SSPC-SP 2 / ISO 8501-1 St 2**
  • Hand Tool Cleaning - removes mill scale, rust, paint

• **SSPC-SP 3 / ISO 8501-1 St 3**
  • Power Tool Cleaning - removes mill scale, rust, paint

• **SSPC-SP 8**
  • Pickling – removes mill scale and rust

• **SSPC-SP 11**
  • Power Tool Cleaning to Bare Metal – roughened surface free of visible contaminants

• **SSPC-SP 15**
  • Commercial Grade Power Tool Cleaning

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Current Industry Standards – Surface Prep???

• **SSPC-SP 13 / NACE No. 6**
  • Surface Preparation of Concrete

• **SSPC-SP 16**
  • Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals
Current Industry Standards

• Canada CAN/ULC-S668-12
  • “Standard for Liners Used for Secondary Containment of Aboveground Flammable and Combustible Liquid Tanks”
PDA Products!

PDA: Polyurea Development Association

• General Guideline: Polyurea Elastomeric Coating / Lining Systems (December 2002)
Some Great News Here!!!!

General Standard: Polyurea / Geotextile Elastomeric Lining Systems

• Currently written in the CSI type format
• Good information contained, but requires updating
Some Great News Here!!!!

General Standard: Polyurea / Geotextile Elastomeric Lining Systems

• Joint Standard Development with PDA / SSPC!!!!!!

• Review Team Contacts Identified:
  • Mr. Benjy Abbott – PDA
  • Dudley Primeaux – SSPC / PDA Liaison (drafted original document)
  • SSPC Team

• Will review the current document, suggest format back to SSPC
Some Great News Here!!!!

So the Million $$$$$ Question ---- WHEN?????

• In process now

• SSPC Conference in Orlando – January 2019
  • Mr. Benjy Abbot – PDA
  • Dudley Primeaux – SSPC / PDA Laison
  • SSPC Team

• Suggested SSPC C.1.9 Polyurea Committee (SSPC-PA 14 & SSPC-Paint 45)
  • Need balance of Industry Representation to meet Standards Development requirements
Conclusion

• It’s time to get back on track
• Have excellent talent and support here in this group
• We can all work together for a common cause....
• Please be patient......
• And Please, help / Volunteer!!!
• Remember the 3 C’s: Committed, Competent, Character
Thank You!

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