

## POLYKEN® YGIII

### Product Information

**Product description:** The Polyken® YGIII System is a multilayer coating system used primarily for the protection of steel and ductile iron water pipelines. The multilayer coating system consists of:

- 1) A liquid adhesive to be applied to the pipe surface
- 2) An anti-corrosion tape to be applied over the adhesive
- 3) A mechanical protective tape or tape system to be applied over the anti-corrosion tape

Polyken® 1019, low VOC Polyken® 1033A and Zero VOC Polyken® 1039 liquid adhesives provide a uniformly smooth contact surface to promote high adhesion of the coating system to the pipe. Liquid Adhesives are formulated with corrosion inhibitors and adhesion promoters. The unique formulation flows and fills surface profiles and irregularities. The adhesives in these and all Polyken® tape systems contain proven anti-microbial additives.

The Anti-Corrosion layer Polyken® 989 is engineered to assure a high bond to the primed surface with excellent conformability characteristics.

The Middle and Outer mechanical protection layers Polyken® 955 and 956 achieve a complete bond to the 989 inner layer, providing maximum handling and in-service protection for the coating system.

#### Features:

- Worldwide reference lists.
- Impermeable to oxygen and moisture.
- Resistant to soil stress.
- Zero VOC coating system available.
- Uniform coating thickness.
- Low cathodic protection-current requirements.
- Exceeds AWWA standards.
- Compatible with large pipe diameters.

#### Benefits:

- Proven long-term performance.
- Low cathodic protection costs. Saving cost over the life of the pipeline.
- Superior in-ground performance.
- Environmentally friendly.
- Easy to apply.
- Saving cost over the life of the pipeline.
- Reliable, high performance corrosion protection.
- Minimizes inventory, thus saving money.

### Product selection guide

|                                     |  |
|-------------------------------------|--|
| <b>Max. operating temperature</b>   | 85°C (185°F)   |
| <b>Recommended primer</b>           | 1019, 1033A or 1039  |
| <b>Recommended pipe preparation</b> | SSA-SA 2 (SSPC-SP6)<br>1 – 3 mil anchor profile<br>(25 – 76 micron anchor profile) |
| <b>Performance</b>                  | AWWA C-214   |

### Product construction

|                      | Inner Layer<br>989-20 | Middle Layer<br>955-30 | Outer Layer<br>956-30 |
|----------------------|-----------------------|------------------------|-----------------------|
| <b>Backing</b>       | 9 mils (0.229 mm)     | 25 mils (0.635 mm)     | 25 mils (0.635 mm)    |
| <b>Adhesive</b>      | 11 mils (0.279 mm)    | 5 mils (0.127 mm)      | 5 mils (0.127 mm)     |
| <b>Backing color</b> | Black                 | Gray                   | White                 |

### Product properties of Polyken® YGIII

| Property  | Method                     | Typical values   |                   | Units   |
|---|----------------------------|------------------|-------------------|---|
|   |                            | 989-20           | 955-30 & 956-30   |   |
| <b>Tensile strength</b>   | ASTM D1000                 | 30<br>5.3        | 50-65<br>8.8-11.4 | pli<br>N/mm   |
| <b>Elongation</b>   | ASTM D1000                 | 300              | 300-400           | %   |
| <b>System properties 80 mils system: 989-20 + 955-30 + 956-30</b> |                            |                  |                   |   |
| <b>Peel adhesion to primed steel</b>                              | ASTM D1000                 | 18.7<br>3.3      |                   | pli<br>N/mm   |
| <b>Cathodic disbondment</b>                                       | ASTM G8                    | 0.25<br>6.4      |                   | in radius<br>mm radius                                |
| <b>Water vapor transmission</b>                                   | ASTM E96B                  | 0.07             |                   | perm  |
| <b>Water vapor transmission rate</b>                              | ASTM F1249 (100°F, 100%RH) | 0.03<br>0.5      |                   | g/100in <sup>2</sup> /24 hr<br>g/m <sup>2</sup> /24hr |
| <b>Volume resistivity</b>   | ASTM E257                  | 10 <sup>15</sup> |                   | Ω.cm  |
| <b>Dielectric breakdown</b>                                       | ASTM D1000                 | 650<br>25.6      |                   | V/mil<br>kV/mm  |
| <b>Dielectric strength</b>  | ASTM D149                  | 20-23            |                   | kV  |
| <b>Impact resistance</b>  | ASTM G-14                  | 90<br>10         |                   | in-lb<br>J  |
| <b>Impact resistance</b>  | ASTM G-13                  | 1000<br>4450     |                   | lb<br>N   |
| <b>Penetration resistance</b>                                     | ASTM G-17                  | 11-15            |                   | %   |

### Equation for Pipe Coating Requirements

**Squares\*\* of coating required**  $\frac{(\text{width of coating in inches}) \times (\text{area of pipe in square feet})^*}{(\text{width of coating in inches} - \text{overlap in inches}) \times 100}$

\* Area of pipe in ft<sup>2</sup> = (diameter in inches / 12) x 3.1416 x length in feet

\*\* One Square = one hundred square feet = 9.29 square meters

**Square meters of coating required**  $\frac{(\text{width of coating in mm}) \times (\text{area of pipe in square meter})^*}{(\text{width of coating in mm} - \text{overlap in mm})}$

\* Area of pipe in m<sup>2</sup> = (diameter in mm / 1000) x 3.1416 x length in meter

**Squares\*\* per roll**  $\frac{(\text{width of roll in inches})}{(12)} \times \frac{(\text{length of roll in feet})}{(100)}$

**Square meters Per roll**  $\frac{(\text{width of roll in mm})}{(304.8)} \times \frac{(\text{length of roll in m})}{(30.48)}$

**Rolls Required**  $\frac{(\text{squares of coating required})}{(\text{squares per roll})}$

**Rolls Required**  $\frac{(\text{square meters of coating required})}{(\text{square meters per roll})}$

### Ordering information

Polyken® 989, 955 and 956 Tape Coatings are available in roll form.

Example **989-20 BLK 12X1000**

|                               |                                   |   |
|-------------------------------|-----------------------------------|---|
| 989                           | Product type                      | Standard Ordering options   |
| 20                            | Total tape thickness in mils      | 20 mils (0.51 mm)   |
| BLK                           | Tape backing color                | Black (BLK)   |
| 12                            | Tape width in inches              | 4" (101 mm), 6" (152 mm), 9" (228 mm), 12" (305 mm), 18" (457 mm) |
| 1000                          | Tape roll length in feet          | 800 ft (244 m), 1000 ft (305 m)                                   |
| <b>951/955-30 GRA 12X1000</b> |                                   |   |
| 955                           | Product type                      | Standard Ordering options   |
| 30                            | Total tape thickness in mils      | 30 mils (0.762 mm)  |
| GRA                           | Tape backing color                | Gray (GRA)  |
| 12                            | Tape width in inches              | 4" (101 mm), 6" (152 mm), 9" (228 mm), 12" (305 mm), 18" (457 mm) |
| 1000                          | Tape roll length in feet          | 800 ft (244 m), 1000 ft (305 m)                                   |
| <b>956-30 WHI UVI 12X1000</b> |                                   |   |
| 956                           | Product type                      | Standard Ordering options   |
| 30                            | Total tape thickness in mils      | 30 mils (0.762 mm)  |
| WHI                           | Tape backing color                | White (WHI)   |
| 12                            | Tape width in inches              | 4" (101 mm), 6" (152 mm), 9" (228 mm), 12" (305 mm), 18" (457 mm) |
| 1000                          | Tape roll length in feet          | 800 ft (244 m), 1000 ft (305 m)                                   |
| UVI                           | Designates Ultraviolet Protection | Standard  |

For other ordering options please contact your Seal For Life representative.

### Application instruction: Job preparation

|   |   |
|---|---|
| <b>Tools, equipment and auxiliaries</b> | Temperature gauge, DFT/WFT gauge, Primer application equipment/agitator, Tape application equipment, Coating "hot box"  |
| <b>Additional coating materials</b>     | 939 or 931 weld seam coating,   |
| <b>High humidity</b>                    | Polyken® YGIII can be applied in a humid atmosphere. The substrate should be free from condensing water which can be reached by keeping the temperature at least 5°F (3°C) above dew point.   |
| <b>Work area and substrate</b>          | The substrate surface should be dry, clean and protected against negative weather influences.   |
| <b>Product conditions</b>               | <p>The Polyken® YGIII shall be stored and/or transported in a dry, ventilated location. Storage temperature shall be a minimum of 60°F (16°C) and a maximum of 120°F (49°C). The minimum primer temperature for application will be 60°F (16°C).</p> <p>The YGIII anti-corrosion layer shall be applied and maintained at a minimum roll body temperature of 70°F (21°C) maximum of 90°F (32°C) and the mechanical protection layer applied and maintained at a minimum roll body temperature of 90°F (32°C), Maximum of 120°F (49°C).</p> <p>The YGIII coating system rolls shall be stored in a temperature controlled storage room for a minimum of 24 hours prior to application. The ambient storage temperature shall not exceed 120° F (49°C).</p> |

|               |   |
|---------------|---|
| <b>Step 4</b> | Spirally apply the inner layer (anti corrosion) with a 1% to 2% neckdown and no less than a 1" overlap<br>Perform holiday detection per NACE RP-02-74 |
| <b>Step 5</b> | Spirally apply the middle layer (mechanical Protection) with a 1% to 2% neckdown and no less than a 1" overlap.                                       |
| <b>Step 6</b> | Spirally apply the outer layer (mechanical Protection) with a 1% to 2% neckdown and no less than a 1" overlap.  |

### Handling and commissioning

|                          |   |
|--------------------------|---|
| <b>Exposure to loads</b> | Objects coated with Polyken® YGIII should not be exposed to loads e.g. from supports- or lifting equipment.   |
| <b>Backfill</b>          | Backfill is possible immediately after completion of the coating application. Consult application guidelines for specific instructions. Backfill should be clean and not contain any foreign items that can cause damage to the coating system. |

### Information

|                        |   |
|------------------------|---|
| <b>Documentation</b>   | Extensive information is available on our web-site. Application instructions and other documentation can be obtained by contacting our offices, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a> |
| <b>Certified staff</b> | Application of the described coating system shall be carried out by certified personnel.  |

### Application instruction: Surface preparation

|   |   |
|---|---|
| <b>General</b>                          | The area to be coated has to be clean, dry, and free from oil, grease and dust. All contamination including mill-scale has to be removed. |
| <b>Degreasing</b>                       | Degrease surfaces with Toluene or Heptane and e.g. a lint-free cloth.   |
| <b>Preventing condensation of water</b> | Prior to and during the application, the temperature of the substrate(s) must be at least 5°F (3°C) above the dew point.                  |
| <b>Substrate temperature</b>            | Temperature of the substrate should preferably be between 68°F and 104°F (20°C / 40°C). Preheating may be required.                       |

### Application instruction: Brief version

|               |   |
|---------------|---|
| <b>Step 1</b> | Clean substrate to SSPC-SP6 /NACE3 or SA 2 (commercial blast) with a 1 – 3 mil anchor profile (25 – 76 micron anchor profile) |
| <b>Step 2</b> | Uniform primer application achieving 2 to 3 mil WFT. Primer should be "dry to touch" before application of inner layer.       |
| <b>Step 3</b> | If required, apply weld seam coating  |

\* For further detailed information, please view the corresponding Application Guideline \*



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