



# STAC Coating System

## Specification & Installation Guide

### 1.0 Scope

- 1.1 This specification may be used for the priming, caulking and wrapping with the STAC Petrolatum Coating System of any of the following surfaces: piping, nuts, bolts, flanges, dresser couplings, valves, tanks, structural steelwork, dissimilar metals/materials, mechanical or electrical penetrations, mechanical equipment and other surfaces as specified herein for above and below ground service.
- 1.2 The Engineer shall select appropriate sections of the specification to ensure that the specification is comprehensive for specified work.

### 2.0 General Requirements

- 2.1 Contractor shall comply with all written recommendations of the manufacturer regarding applications of the specified system.
- 2.2 To obtain the specified materials contact [PTY ENTERPRISES, Inc](mailto:todd@ptyenterprises.com) at [todd@ptyenterprises.com](mailto:todd@ptyenterprises.com). 510-514-9924

### 3.0 Materials

- 3.1 The STAC tool kit shall consist of the following tools:
  - 3.1.1 Wire brush
  - 3.1.2 Chipping hammer
  - 3.1.3 Cotton gloves (optional)
  - 3.1.4 Putty knife
  - 3.1.5 Paint brush
  - 3.1.6 Clean-up rags
  - 3.1.7 Scissors
- 3.2 STACprime
  - 3.2.1 The Primer shall be comprised of saturated hydrocarbons (petrolatum), inert fillers and passivating agents.
  - 3.2.2 The Primer will be an integral component of the STAC Coating Systems used for the preparation of metal surfaces prior to wrapping. STACprime will displace moisture, passivate surface oxides, fill surface imperfections and ensure intimate contact between STACwrap tapes.
- 3.3 STACfill
  - 3.3.1 The STACfill shall be comprised of saturated petrolatum hydrocarbons (petrolatum), inert fillers, reinforcing fibers and thermal extenders. Variations may contain beads of cellular polymer and flow control additives
  - 3.3.2 STACfill shall be a cold applied self-supporting material used for molding around irregular shaped fittings to provide a suitable profile for applying anti-corrosion tapes.

3.3.3 The physical specification values shall meet the values given on the STACfill data sheet.

#### 3.4 STACwrap

3.4.1 Petrolatum tapes shall have a character stable in composition and plasticity over a wide temperature range. The tape shall be non-hardening and non-cracking. The tape shall accommodate vibration and extreme movement of substrate. Superficial oxidation renders surface less tacky. The tape is highly resistant to mineral acids and alkalis.

3.4.2 The physical specification values shall meet the values given on the STACwrap data sheet.

### 4.0 General Surface Preparation Requirements

- 4.1 Use chipping hammer to remove any loose areas of rust, paint, excess weld bead and any sharp points or edges. Any tightly adherent paints or old coatings can be left on the substrate.
- 4.2 Remove excess dirt, grease, oil, moisture and frost according to the requirements of SSPC-SP-1 "Solvent Cleaning".
- 4.3 Remove loose rust, paint and foreign matter by hand and/or power tools in accordance with SSPC-SP-2 or SP-3, "Hand Tool Cleaning" or "Power Tool Cleaning" respectively.
- 4.4 High pressure water blasting may be used to prepare the surface in accordance with SSPC-SP7 "Brush-off Blast Cleaning".

### 5.0 Application of STACprime

- 5.1 Apply STACprime by hand, brush, glove or roller.
- 5.2 Apply a thin uniform film over the entire surface to be wrapped.
- 5.3 Apply a liberal coating of STACprime to fill, cavities, shoulders, pits and pipe threads.
- 5.4 Use a brush if needed to penetrate narrow threads, cavities, bolt heads, etc.

### 6.0 Application of STACfill

- 6.1 To protect complex surfaces and configurations such as valves bodies, flanges, dresser couplings, etc., apply STACfill by filling and packing to achieve a uniform contour to which STACwrap can be applied without bridging or voids.
- 6.2 Use a putty knife or gloved hand to apply STACfill in voids, cavities, etc.
- 6.3 Contour the extremely uneven surfaces and remove air pockets.
- 6.4 Use sparingly as excessive amounts are unnecessary.

### 7.0 Application of STAC Coating System on Straight Line Pipe

- 7.1 The tape shall be spirally wrapped on pipe, cable, conduit, fittings, etc., using a minimum 1" (25.4 mm) overlap on all applications. Where additional protection is required (e.g. cooling tower piping), the overlap shall be increased to 55% which will provide a double thickness of tape.
- 7.2 The tape may be applied longitudinally, i.e. "cigarette wrapped". When the space is too restricted or confined to apply in the preferred spiral manner. Use a minimum 4" (100 mm) overlap and keep the overlap on the topside of the pipe to provide a weatherboard effect.
- 7.3 The tape shall be held firmly against the starting point and pressed firmly onto the surface. Unroll the tape, keeping the roll close to the surface. Avoid a long lead of tape as it will tend to fold and gap on the surface being wrapped. The tape is best applied by maintaining proper tension during installation.
- 7.4 Apply sufficient tension to provide continuous adhesion, but do not stretch the tape. As application proceeds, press out all folds and air pockets as they occur.
- 7.5 Maintain a minimum 4" (100 mm) overlap when overlapping one roll with the other end of a new roll. Overlap must occur on the top half of the pipe.



- 7.6 At the completion of each roll, smooth the overlaps by hand in the direction of the spiral to ensure sealing of the overlap.
- 7.7 On all vertical applications, begin at the bottom and proceed up thereby creating a "weatherboard" overlap.
- 7.8 When smoothing the tape and sealing the overlaps, place a small amount of STACprime on the hands or gloves as it will facilitate this process, particularly in cooler weather or on cold surfaces.

#### **8.0 Application of STACguard**

- 8.1 Spiral wrap STACguard self-adhesive tape over the STACwrap to provide better mechanical protection. STACguard is not needed in every application of the STAC Coating System.
- 8.2 STACguard is recommended in high traffic or high use areas and where frequent mechanical contact occurs. The use of STACguard should be used;
  - 8.2.1 As a barrier to prevent backfilling damage and to minimize the effect of inherent soil stresses and pressures
  - 8.2.2 To prevent the natural leaching effect of the petroleum compound into the soil
  - 8.2.3 To maintain the systems dielectric strength when the system includes cathodic protection.

#### **9.0 Application of STAC Coating System on Vertical Applications**

- 9.1 Apply STACwrap in a spiral pattern. Begin layering from the bottom and working up. This will provide an overlap which will prevent water, dust and other particles from being captured.
- 9.2 When overlapping rolls spiral wrapping is usually preferred not only because of the ease of application, but the result is a continuously wrapped system with constant uniform tension.
- 9.3 "Cigarette Wrapping" is also an acceptable wrapping technique when space is confined or restricted, i.e. pipe is mounted near a wall.
  - 9.3.1 Cut length of STACwrap so the overlap is at least 4" (100 mm) on one wrap around.
  - 9.3.2 Overlap at the top half of the pipe, not the bottom half.
  - 9.3.3 Overlap so the layers create a "weatherboard".
  - 9.3.4 Smooth the STACwrap with hand or glove as it is applied, removing air bubbles and voids.

#### **10.0 Application of STAC Coating System on Flanges, Dresser couplings, Valve Bodies, etc.**

- 10.1 After the nuts and bolts have received STACfill, flanges, couplings, valve bodies, etc. can be wrapped two ways:
  - 10.1.1 Using a width of tape wide enough that when wrapped circumferentially, enough tape will lap over the sides to allow the installer to smooth it into the sides of the pipe; or
  - 10.1.2 Take several short pieces of tape and apply them longitudinally along the axis of the pipe up over the flanges and down onto the other side. By overlapping each piece by at least 4" (100 mm), all surfaces can be covered.

#### **11.0 Application of STAC Coating System on Underground Applications**

- 11.1 Prepare surface as described in Section 4.0
- 11.2 Apply STACprime as described in Section 5.0
- 11.3 Apply STACwrap as described in Section 7.0
- 11.4 Apply STACguard as described in Section 8.0

#### **12.0 Application of STAC Coating System on Structural Steelworks, Beams and Frames**

- 12.1 Prepare the surface as described in Section 4.0



- 12.2 Select width of STACwrap which permit overlaps of at least 4" (100 mm) to be made in the downward direction. Overlapping will maintain a weatherboard effect on vertical surfaces. Do not overlap STACwrap on the underside of horizontal surfaces.
- 12.3 Apply STACwrap longitudinally by unrolling along the structural shape so that the outside of roll is in contact with steelworks. Do not attempt to apply STACwrap on longitudinal lengths greater than 5 ft. (1.5 m).
- 12.4 Press down and smooth as application proceeds paying particular attention to the overlaps.
- 12.5 Care should be exercised to ensure the STACwrap is pressed firmly into all angles and corners, and then worked along the adjacent flat surfaces. This application will prevent gaps, bridging or stretching.
- 12.6 Apply sufficient tension to give complete adherence. Avoid folds and air pockets, pressing out any which may appear.
- 12.7 Rivet heads, nuts, bolts, etc. May be prepared by making an incision in the tape in the form of a cross over the crown of the rivet, etc., and a small patch of tape pressed over the partially wrapped crown and thoroughly smoothed over.
- 12.8 Sharp edges and corners require extra care. Avoid damage caused by stretching or rubbing tape along such edges. On corroded edges, a prior positioning of a length of 2" (50 mm) wide STACwrap should be made to cushion the spiral applied STACwrap.

### **13.0 Application of STAC coating System on Structural Steelworks – Alternative for “I” Beams and “H” Beams**

- 13.1 An alternative method for the protection of structural “I” or “H” beams is to insert pre-cut Styrofoam blocks into the webs of the members. Use pieces slightly larger than the flange width (I) beam, liberally primed on all sides with STACprime. The resulting “box” configuration can then be spiral wrapped with STACwrap.

### **14.0 Application of STAC Coating System on Pipe Hangers, Brackets, Supports, U-Bolts, etc.**

- 14.1 Prepare the surface as described in Section 4.0
- 14.2 Apply STACprime to the hanger, ensure all bolt threads, U-bolts, etc. are well covered.
- 14.3 Apply STACfill as needed to contour the voids between the hanger and the pipe. If the hanger is a new installation, place a length of tape between the hanger and pipe to isolate the dissimilar metals.
- 14.4 Place a single wrap of STACwrap around the hanger and underneath the pipe. This will protect the hanger.
- 14.5 Spiral wrap STACwrap the entire length of piping and hangers making certain cavities and all surfaces around hanger are covered.

### **15.0 Application of STAC coating system on Electrical Cabinets, Sheet Metal Covers, etc.**

- 15.1 Prepare the surface to remove loose paint and surface corrosion.
- 15.2 Select wider STACwrap tape widths depending on specific structure. Normal stock is up to 12" (304 mm), but special order widths are available up to 39.4" (304 mm).
- 15.3 Select width of STACwrap which permit overlaps of at least 4" (100 mm) to be made in the downward direction. Overlapping will maintain a weatherboard effect on vertical surfaces. Do not overlap STACwrap on the underside of horizontal surfaces.
- 15.4 Apply STACwrap longitudinally by unrolling along the structural shape so that the outside of the roll is in contact with the surface. Do not attempt to apply STACwrap on longitudinal lengths greater than 5 ft. (1.5 m).
- 15.5 Press down and smooth as application proceeds paying particular attention to the overlaps.
- 15.6 Care should be exercised to ensure the STACwrap is pressed firmly into all angles and corners, and then worked along the adjacent flat surfaces. This application will prevent gaps, bridging or stretching.
- 15.7 Apply sufficient tension to give complete adherence. Avoid folds and air pockets, pressing out any which may appear.

- 15.8 Rivet heads, nuts, bolts, etc. May be prepared by making an incision in the tape in the form of a cross over the crown of the rivet, etc., and a small patch of tape pressed over the partially wrapped crown and thoroughly smoothed over.
- 15.9 Sharp edges and corners require extra care. Avoid damage caused by stretching or rubbing tape along such edges. On corroded edges, a prior positioning of a length of 2" (50 mm) wide STACwrap should be made to cushion the spiral applied STACwrap.

#### **16.0 Application of STAC Coating System on Dissimilar Metals – Corrosion Isolation**

- 16.1 Select suitable width of STACwrap.
- 16.2 Press down firmly onto underlying surface, avoiding folds and air pockets.
- 16.3 Position second material over the STACwrap, press down and secure.
- 16.4 Cover exposed nuts, bolts, rivet heads, etc., with STACprime.
- 16.5 For complete protection, apply a patch of STACwrap over the bolt heads.

#### **17.0 Application of STAC Coating System on Dissimilar Metals – Concrete/Steel Boundaries**

- 17.1 When sealing tank bottoms that sit on concrete rings or pads, or other steel-on-concrete installations where applicable tape will be placed in contact with the concrete surface, apply any standard concrete sealer to the concrete surface prior to placing the tape in contact with the concrete, i.e. tanks, ladder feet, equipment feet, etc..

#### **18.0 Application of STAC Coating System on Cold Sweating Lines or Wet Surfaces**

- 18.1 Remove excess moisture or frost with cloth or squeegee.
- 18.2 Apply a liberal film of STACprime underwater as a "flow coat", i.e. wiping it on with as little scrubbing action as possible. This also displaces moisture due to spray, misting rain, cooling tower fallout, rain puddles in ditches, etc..
- 18.3 Apply STACwrap as described previously.

#### **19.0 Application of STAC Coating System on Cooling Tower Piping & Associated Steelwork**

- 19.1 All exposed horizontal pipe work within 100 ft. (30 m) of the tower requires a 55% overlap of STACwrap and an outer layer of an appropriate material such as UV resistant STACguard or metallic jacketing.
- 19.2 A materials-saving method of achieving a double thickness of tape (on the upper arc of the pipe only), is to longitudinally apply STACwrap along the top axis of the pipe. Apply a standard spiral wrap of STACwrap over this.
- 19.3 All other pipe work, valves, fittings, etc., including vertical risers and less exposed surfaces, may be wrapped by the standard methods, depending upon site conditions and environment.

#### **20.0 Application of STAC Coating System for Ground Line Corrosion Protection (Pipe Emerging from the Ground)**

- 20.1 The surface of the pipe shall be cleaned from 24" (600 mm) below grade to 24" (600 mm) above grade.
- 20.2 Apply STACprime, STACfill, STACwrap and STACguard as previously described.

#### **21.0 Application of STAC Coating System for Protection of Insulated Lines**

- 21.1 Over wrapping insulated pipe with STACwrap with a 55% overlap is a most effective moisture barrier.
- 21.2 Insulation wrapped with STACwrap must be double thickness and have staggered joint construction.
- 21.3 Apply STACguard over the STACwrap layer.

#### **22.0 Application of STAC Coating System on Field Joints of Shop Coated Pipe**

- 22.1 Prepare surface as described in Section 4.0, pay close attention to the wells splatter that leaves sharp edges.



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22.2 Liberally apply STACprime to the joint area.

22.3 Apply STACfill if needed to profile sharp edges of the welded joint.

22.4 Apply STACwrap with a spiral wrap 55% overlap. Start and finish the application of tape 4" - 6" (100 – 150 mm) onto each side of factory applied coating.

22.5 Apply STACguard with a spiral wrap normal overlap. Start and finish the application of tape 4" - 6" (100 – 150 mm) onto each side of factory applied coating, over the outside of the STACwrap joint.

### **23.0 Post-Installation Inspection of STAC Coating System**

23.1 The underlying surface beneath STACwrap may be inspected at any time, while in service, merely by cutting an "H" or "X" in the tape. Peel back the flaps and inspect the underlying surface. Upon completion of the inspection, simply press the flaps back in place. Smooth the tape and smear the cut edges and tape is again ready for service.