PERMA-PIPE, Inc.
GOLD COATING SYSTEMS
for MULTI-THERM 500®
POLY-THERM® and XTRU-THERM®

Installation Manual
Supplement

GENERAL

Perma-Pipe offers three different coating options for each of the MULTI-THERM 500® conduit, and POLY-THERM® and XTRU-THERM® service pipes. The selected coating is applied to the conduit / service pipe OD prior to the application of the polyurethane foam insulation and the FRP (Fiberglass Reinforced Plastic) or the HDPE (High Density Polyethylene) jacket.

The three coating options are Epoxy, Urethane Elastomer and Zinc. Epoxy has been used in a wide variety of industrial applications, while Urethane Elastomers have been used for many years for direct burial. Zinc is an excellent coating for high temperatures and when boiling conditions are present. This installation manual supplement provides instructions for each of the three coating systems specific to the field application of each coating system. Refer to the appropriate PERMA-PIPE product Installation Manual for complete installation recommendations.

IMPORTANT: As with the application of any paint or coating, proper surface preparation is essential for adhesion of the coating to the steel pipe. Perma-Pipe has blasted the field joint area to be welded at our factory to near-white metal surface cleanliness in accordance with SSPC-SP10. The conduit / service pipe ends are then covered with tape prior to the factory coating application. The protective tape must remain on the pipe ends until welding.

The conduit / service pipe surface has been blast cleaned for optimum adhesion and performance of the selected coating. Protecting the pipe ends will minimize additional surface preparation.

When cold or wet weather conditions are present, tenting and / or heating may be required to enable the proper application and curing of the field joint coating. Contact Perma-Pipe if you have any questions.

MATERIALS

All materials, equipment and tools should be readily available before starting.

PERMA-PIPE provides the following materials:
- Field joint coating kits
- MSDS Sheets

SAFETY

Due to the many possible variations in applications, use, installation conditions, and environment, these installation recommendations cannot address all possibilities. These recommendations are for general applicability, they are believed to be reasonably accurate and reliable. The installer is ultimately responsible for a proper installation. Trained and qualified personnel should be used.

PERMA-PIPE cannot anticipate every circumstance that might involve hazard. The warnings in this Installation Manual are, therefore, not all-inclusive. The installer must satisfy himself that each procedure, tool, work method and technique is safe.

Review the Material Safety Data Sheets (MSDS) for safe handling and use procedures. Wear all recommended safety equipment, including eye protection and gloves. It is important that good ventilation is present when working with any of the coatings. Perma-Pipe recommends wearing the proper NIOSH approved mask / respirator. Solvent vapors are heavier than air and must be ventilated from low and/or confined areas.

RECEIVING / STORAGE

All materials have been factory inspected and carefully loaded and braced to prevent damage in shipment to the job site. Refer to the appropriate PERMA-PIPE product Installation Manual for complete receiving / storage recommendations.
COATING KIT STORAGE

- Store the coating kits indoors at temperatures at 40°F to 100°F. Keep materials in their original containers. DO NOT ALLOW TO FREEZE.
- Refer to the Material Safety Data Sheets (MSDS Sheets) for proper handling, storage and use.
- Contact PERMA-PIPE if additional MSDS Sheets are needed.

PIPE UNITS

The service conduit / service ends are covered with tape prior to the factory coating application. The tape must remain on the pipe ends until welding to protect the blasted metal surface.

Do not remove the protective tape until ready to weld.

The conduit closure bands are also coated. The edges to be welded have protective tape.

Inspect the taped ends for damage, adherence or breaks at edge of coating to the tape. Re-tape the pipe end with the factory supplied tape if necessary.

WORK PLANNING

Each of the three coating systems included in this manual has specific mixing and application instructions. Refer to the specified coating system for the correct application procedure.

After the welds are complete, the conduit / service pipe surface will need to again be protected, unless painting begins within two hours.

NOTE: Once the factory applied protective tape is removed, the steel pipe surface will begin to develop rust bloom. Perma-Pipe recognizes that there may be some amount of time between the welding of the field joint and the application of the coating. It is very important to continue to protect the pipe surface until it is ready to be painted. With the provided tape, securely cover the bare metal surface.

Both the Epoxy and Urethane Elastomer coating systems have a limited pot life when their two components are mixed together. Work planning and attention to pot life and temperature will limit waste. You may decide to mix part of a kit to minimize waste and the need to purchase additional materials.

If specified, the Epoxy and Urethane Elastomer coating systems can be holiday tested after they have fully cured.

WET FILM THICKNESS GAUGES

Each coating system will be brush applied to the field joints and require a minimum mil thickness. To verify and record the correct minimum coating mil thickness at each field joint, Perma-Pipe has supplied throwaway plastic wet film gauges.

Hold the gauge face perpendicular to the surface and press into the fresh wet coating until the gauge rests square on the base material, and then withdraw without slide movement. The true wet film thickness lies between the highest step coated (5mils) and the next higher step which did not coat (7 mils) as shown in the above diagram.

Side 1 of the wet film thickness gauge reads from 2 to 32 mils. Use this side for all measurements.
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EPOXY COATING

PRODUCT DESCRIPTION

The factory applied epoxy coating is a two part coating consisting of a base material and curing agent. It is spray applied to a minimum thickness of 8-12 mils. The coated pipe is holiday tested at 1,000 volts to ensure a void free coating. Areas not passing the holiday test are patch coated and retested.

FIELD JOINT COATING SYSTEM

Perma-Pipe provides DEVOE High Performance Coatings DEVMAT®101 Epoxy Coating. The DEVMAT®101 is a 100% solids, two-component coating. The DEVMAT®101 will be provided as pre-measured Part A and Part B components. These components ship in a 1 gallon container for field mixing.

SAFETY PRECAUTIONS AND CLEAN UP

Refer to the MSDS sheet before use.

Clean-up should be done with Xylene. This solvent is not provided by Perma-Pipe and is available at most paint stores.

Follow the manufacturer’s safety recommendations when using any solvent.

SURFACE PREPARATION

The joint area to be field welded has been factory blasted to near-white metal surface cleanliness in accordance with SSPC-SP10. These pipe ends are then covered with tape prior to the factory coating application. DO NOT REMOVE THE PROTECTIVE TAPE UNLIT READY TO WELD THE PIPES. The pipe surface must be clean and dry. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion. Remove any rust bloom that may have developed in accordance with SSPC-SP3.

SSPC-SP3 uses mechanical methods of surface preparation involving the use of power sanders or wire brushes, power chipping hammers, abrasive grinding wheels, needle guns, etc.

APPLICATION CONDITIONS

Temperature: 45°F minimum, 100°F maximum (air, surface, and material)

Relative humidity: 85% maximum

APPLICATION PROCEDURE

When combined, Part A and Part B will produce ½ gallon of epoxy paint.

Mix together the Part A and Part B components. Thoroughly mix using a power drill and a paint agitator.

Strip coat the weld area first, ensuring that the paint completely covers all crevices and angular areas. Continue painting the remaining joint area.

Apply paint to the recommended wet film thickness of 8 to 12 mils. Use the Wet Film Thickness Gauge to verify proper coating thickness. When dry, the dry film thickness will be the specified 8 to 12 mils. At 77°F and 50% RH, the epoxy paint will cure hard in 12 hrs.

One half gallon of DEVMAT®101 will have a coverage area 64 – 96 sq. ft. when applied at a wet film thickness of 8 to 12 mils. Once mixed, the pot life is 15 to 20 minutes @ 77°F and 50% RH.
URETHANE ELASTOMER COATING

PRODUCT DESCRIPTION
The Urethane Elastomer coating is a sprayable two component, aromatic, corrosion protection elastomeric coating applied to a minimum thickness of 20 mils. The coated pipe is holiday tested at 2,500 volts to ensure a void free coating. Areas of the pipe not passing the holiday test are patch coated and retested.

FIELD JOINT COATING SYSTEM
Perma-Pipe provides Isotec International’s IsoCoat KL257 coating for the field joints. The IsoCoat KL257 is a two part coating that can be either hand mixed with a spatula or with a drill and paint agitator. The coating is supplied in two pre-measured cans. The smaller can “A” is added to the larger can “B” and then mixed together. The coating is then brush applied to a thickness of 20 mils.

SAFETY PRECAUTIONS AND CLEAN UP
Refer to the MSDS sheet before use.
Clean spill and splatters immediately with Xylene, R2K4. Clean tools immediately after use with Xylene, R2K4.
Follow the manufacturer’s safety recommendations when using any solvent.

SURFACE PREPARATION
The joint area to be field welded has been factory blasted to near-white metal surface cleanliness in accordance with SSPC-SP10. These pipe ends are then covered with tape prior to the factory coating application. DO NOT REMOVE THE PROTECTIVE TAPE UNTIL READY TO WELD THE PIPES.

The pipe surface must be clean and dry. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion. Remove any rust bloom that may have developed in accordance with SSPC-SP3.

SSPC-SP3 uses mechanical methods of surface preparation involving the use of power sanders or wire brushes, power chipping hammers, abrasive grinding wheels, needle guns, etc.

APPLICATION CONDITIONS
Temperature: 35°F minimum, 95°F maximum (air, surface, and material)
Relative humidity: 85% maximum

APPLICATION PROCEDURE
The proper blending ratio for KL257 is 28 parts “A” to 100 parts “B”. Perma-Pipe provides the KL257 in premeasured cans.

Add can “A” to the larger can “B” and then mix together. If hand mixing with a spatula, mix for 90 seconds or until a uniform blend is attained.

Mix the two parts for 20-30 seconds when mixing using a power drill and a paint agitator.

Strip coat the weld area first, ensuring that the paint completely covers all crevices and angular areas. Continue painting the remaining joint area.

Apply paint to the recommended wet film thickness of 24 to 26 mils. Use the Wet Film Thickness Gauge to verify proper coating thickness. When dry, the dry film thickness will be the specified minimum 20 mils.

At 74°F the pot life is 11-14 minutes. In 20-25 minutes the painted joint will be tack free and will be cured after 45 minutes.
ZINC COATING

PRODUCT DESCRIPTION

The factory applied zinc coating is a two part high solids inorganic zinc rich coating that protects the steel galvanically, thus eliminating sub-film corrosion. The zinc coating consists of a liquid base portion and a dry powdered metal. The two components are mixed together and spray applied. The dry film thickness shall be in a range of 2 to 4 mils.

FIELD JOINT COATING SYSTEM

Perma-Pipe provides Sherwin-Williams ZINC CLAD® 5 zinc coating for the field joints. ZINC CLAD® 5 is a one-package zinc-rich organic coating. The ZINC CLAD® 5 will be provided in one gallon cans. It contains 90% by weight dust pigment in the dried film.

SAFETY PRECAUTIONS AND CLEAN UP

Refer to the MSDS sheet before use.

Clean spill and splatters immediately with Xylene, R2K4. Clean tools immediately after use with Xylene, R2K4.

Follow the manufacturer’s safety recommendations when using any solvent.

SURFACE PREPARATION

The joint area to be field welded has been factory blasted to near-white metal surface cleanliness in accordance with SSPC-SP10. These pipe ends are then covered with tape prior to the factory coating application. DO NOT REMOVE THE PROTECTIVE TAPE UNTIL READY TO WELD THEPIPES.

The pipe surface must be clean and dry. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion. Remove any rust bloom that may have developed in accordance with SSPC-SP3.

SSPC-SP3 uses mechanical methods of surface preparation involving the use of power sanders or wire brushes, power chipping hammers, abrasive grinding wheels, needle guns, etc.

APPLICATION CONDITIONS

Temperature: 35°F minimum, 95°F maximum (air, surface, and material)
At least 5°F above dew point
Relative humidity: 85% maximum

APPLICATION PROCEDURE

Continuously mix the one gallon can of ZINC CLAD® 5 using a power drill and a paint agitator. Continual agitation is necessary as the heavy zinc solids will settle to the bottom of the can.

Strip coat the weld area first, ensuring that the paint completely covers all crevices and angular areas. Continue painting the remaining joint area.

Apply paint to the recommended wet film thickness of 7 to 10 mils. Use the Wet Film Thickness Gauge to verify proper coating thickness. When dry, the dry film thickness will be the specified 2 to 4 mils.

One gallon of ZINC CLAD® 5 will have a coverage area 165 – 219 sq. ft. when applied at a wet film thickness of 7 to 10 mils. When not using the paint, replace the lid, sealing it air tight.

DRIED SCHEDULE @ 10 MILS WET 50% RH:

- 55°F: To touch 4 HRS, To recoat 30 HRS
- 77°F: To touch 2-3 HRS, To recoat 24 HRS
- 100°F: To touch 30 MIN, To recoat 1 HRS