# Tapecoat®

## Application Guideline

### 1.0 SCOPE

This document contains general instructions and recommended practices for the application of Tapecoat epoxy coating systems. The various epoxy grades discussed in this document are used for the corrosion protection of piping, girth welds, fittings, pipe reconditioning and pipe fabrication for above and below grade environments. The specifics of where the product can be used are detailed in Section 2.0. Specific coating properties including pot life, recoat window and time before backfill are listed in Appendix A. For assistance in coating selection, surface preparation, application or inspection, please contact a Chase Representative.

### 2.0 MATERIALS

2.1 TC® 7000 Epoxy - A two part, 100% solids, high temperature coating designed to provide protection against corrosion on pipelines with service temperatures up to 300°F (149°C). TC 7000 can be used as an above or below grade standalone coating or as a primer for Tapecoat high temperature tape products. It can be applied by brush, applicator pad or spray. In above grade applications oxidation is expected, but at the recommended coating thickness long term protection will be provided.

2.2 TC® 7025 EZ Flow Epoxy - A two part, 100% solids coating designed to provide protection against corrosion on pipelines with service temperatures up to 165°F (74°C). TC 7025 is a below grade, standalone coating that can be applied by brush, applicator pad or spray.

2.3 TC® 7030 High Build Epoxy - A two part, 100% solids, high build, high temperature coating designed to provide protection against corrosion on pipelines with service temperatures up to 300°F (149°C). TC 7030 is a below grade, standalone coating that can be applied by brush or applicator pad.

2.4 TC® 7100 Epoxy - A two part, 100% solids coating designed to provide protection against corrosion on pipelines with service temperatures up to 165°F (74°C). TC 7100 is an above or below grade, standalone coating that can be applied by brush or applicator pad to dry and damp surfaces. In above grade applications oxidation is expected, but at the recommended coating thickness long term protection will be provided. The TC 7100 was designed to provide superior adhesion to damp surfaces.

2.5 TC® Wet Bond Epoxy Mastic - A two part, 100% solids coating designed to provide protection against corrosion on pipelines with service temperatures up to 165°F (74°C).

Wet Bond Epoxy Mastic can be used below or above grade on dry to wet surfaces. In above grade applications oxidation is expected, but at the recommended coating thickness long term protection will be provided. It is a high build, standalone coating that can be applied by brush or applicator pad. The Wet Bond Epoxy Mastic was designed to provide superior adhesion to wet and fresh water submerged surfaces.

2.6 TC® Reinforcing Mesh – A mesh reinforced nonwoven used during the application of the epoxies to increase the impact and abrasion resistance.

2.7 Tapecoat Terra Shield® - A 3/8" thick closed cell polyethylene foam rock shield with ¼" perforations. Protecting the pipe coating by cushioning the impact of the backfill as it is reintroduced into the ditch and keeping deleterious backfill from direct contact with the pipe coating after the ditch has been closed.

## 3.0 SURFACE PREPARATION

3.1 All substances that will impede bond or otherwise be detrimental to the performance of the coating system must be removed prior to the coating application. This includes all loose surface material, rust, dirt, dust, moisture, grease, oil, sharp edges, burrs, mill scale, welding splatter and shop lacquer.

3.2 When applying epoxy the pipe cleaning must meet SSPC-SP 10/NACE No. 2/ SA 2 ½. The surface profile must be 2-4 mils. When the epoxy is used as a girth weld coating over new FBE, the FBE must meet SSPC-SP 1 at a minimum. When the epoxy is used as a girth weld coating over new, cured epoxy, the epoxy must abraded so that it has a surface profile or 2-4 mils. When the epoxy is used as a repair or reconditioning coating over existing epoxy or FBE the cleaning must meet SSPC-SP 2 or SSPC-SP 3 at a minimum, but SSPC-SP 6/NACE No.3 can also be used. The surface must be abraded so that it has a surface profile or 2-4 mils.

3.2.1 SSPC-SP 1 SOLVENT CLEANING

3.2.2 SSPC-SP 2 HAND TOOL CLEANING: Scrapers, files and wire brushes.

3.2.3 SSPC-SP 3 POWER TOOL CLEANING: Power brushes and grinders

3.2.4 SSPC-SP 6 / NACE No.3 COMMERCIAL BLAST CLEANING

3.2.5 SSPC-SP 10 / NACE No.2 / SA 2 ½ NEAR WHITE BLAST CLEANING
Important to note: Clean the grit or shot off the pipe surface after blasting.

3.3 The coating must be applied as soon as practical after cleaning to keep dirt and rust bloom from re-contaminating the pipe surface.

3.4 Before coating application the surface must be dry. Preheating the surface can aid in drying the surface, but care must be given to not exceed 150°F. Be cautious not to damage the existing coating during this step by always keeping the torch moving.

## 4.0 APPLICATION

### 4.1 Brush or Applicator Pad Application

4.1.1 The epoxy is supplied in kits to allow for the correct ratio between the Part A and Part B. Do not make any changes to the mix ratio. Do not add thinner to the epoxy.

4.1.2 Pour the Part B (Hardener) into Part A (Resin). Scrape the part B container to make sure as much of the material as possible is used. For kits smaller than 1 gallon mix the combined parts using a stir stick for 3 minutes. For kits that are 1 gallon and larger a drill with a mixing blade should be used for 3 minutes.

4.1.3 After the mixing is complete pour some of the material back into the Part B container. Mix with a stir stick and add the material back to the Part A container. Mix for an additional 30-60 seconds.

4.1.4 Using a solvent resistant brush or applicator pad apply a coat that has a maximum wet film thickness (WFT) as detailed in Appendix A. A WFT gauge should be used to verify the coating thickness. Be sure to touch up the marks left by the gauge before the coating cures. The Tapecoat epoxies are all 100% solids so the dry film thickness (DFT) measurement will be the same as the WFT.

4.1.5 If multiple coats are required or for increased protection, allow the first coat to dry to a light touch before application of the second coat. Apply a second coat of epoxy as described in Section 4.1.4. Never exceed the pot life or recoat window listed in Appendix A. If the recoat window has been missed the surface must be prepared as listed in Section 3.

4.1.6 For added impact and abrasion resistance TC Reinforcing Mesh can be applied between coats or over the final coat before the final coat dries. When coating a pipe the Reinforcing Mesh should be applied spirally using light tension. When coating fittings or other structures the Reinforcing Mesh can be cut to length and laid into the wet epoxy. Use a brush or applicator pad to smooth the Reinforcing Mesh and allow it to wet out.

### 4.2 Spray Cartridge Application

4.2.1 Cartridges should be warmed to 90-110°F for 1-2 hours to allow for an even spay pattern. Do not exceed 120°F as this will affect the integrity of the spray cartridge.

4.2.2 Remove the retaining nut, compression disc and end cap from the cartridge nozzle.

4.2.3 Seat the static mixer tip onto the cartridge and tighten the retaining nut securely onto the cartridge threads.

4.2.4 Insert the cartridge into the pneumatic gun housing.

4.2.5 Attach the atomization airline to the static mixer tip. Attach the airline hose to an air supply.

4.2.6 To achieve on ratio mixing, point cartridge assembly up and slowly dispense material into the static mixer tip. Dispense the first 6 inches of unmixed material into a waste container. Repeat this procedure for each new or partially used cartridge.

4.2.7 Adjust the air pressure (gauge near the bottom of the gun) to 90-100psi. Adjust the fluid pressure (dial at the end of gun) as needed to obtain a good spray pattern.

4.3 Two Part Spray Application

4.3.1 Airless or air assisted type spray equipment available from several manufacturers may be used. The following procedures have provided satisfactory results, but alternatives may be equally successful.

| | |
|---|---|
| Delivery Flow Rate | 1 GPM |
| Fluid Pressure at tip | 3,500 psi |
| Tip Opening | Graco 331 for up to 12” pipe<br>Graco 431 for larger pipe |

4.3.2 Follow all safety instructions listed by the maker of the spray equipment.

## 5.0 INSPECTION AND TESTING OF FIELD APPLIED COATING

5.1 Visual Inspection: The epoxy shall appear uniform and free of voids.

5.2 Electrical Continuity Test (Holiday Detector): A coil spring electrode or brush-type electrode should be used. The voltage should be determined using NACE RP0274 (Discontinuity (Holiday) Testing of Protective Coatings). The voltage setting is determine using the below formula. The material thickness used in this equation is the WFT or DFT.

Holiday Detection Voltage Setting (Volts) = √thickness (mils) x 1250

## 6.0 REPAIR OF DAMAGED COATING

6.1 All damaged and loose coating must be removed. After removal the surface must be prepared as discussed in Section 3.

6.2 Apply the epoxy as detailed in Section 4.The new epoxy coating should overlap the existing coating by a minimum of 1" on all sides.

## 7.0 HANDLING, SHIPPING AND STORAGE

7.1 Care should be taken to handle the coated pipe in such a manner as to prevent exposure to abrasion or damage during handling, shipping, storage or installation.

7.2 Booms, hooks, forklifts, skids and all other devices used to move or handle coated pipe must be padded to prevent damage to the coating. Chains and steel bands should not be used.

7.3 Pipe should be shipped with sufficient padding or dunnage to adequately protect the pipe coating.

## 8.0 BACKFILL

8.1 The epoxies must be cured to a Shore D Hardness of 75 before they can be backfilled. At 70°F and 50% RH the minimum cure times are listed in Appendix A. Cure times will vary significantly depending on the site conditions and coating thickness.

8.2 Backfill should be free of large rocks, stones, scrap, and debris that could damage the coating.

8.3 Tapecoat Terra Shield can be used to protect the coating when it is determined that backfill, handling or installation could be detrimental to the integrity of the coating.

# Appendix A

## Coating Properties

| Epoxy | Maximum Thickness per Coat | Target Thickness for Most Applications | Pot Life | Maximum Recoat Window |
|---|---|---|---|---|
| TC 7000 | 25 mils | 25 mils | 15-20 minutes | 6 hours |
| TC 7025 | 25 mils | 25 mils | 25-30 minutes | 6 hours |
| TC 7030 | 40 mils | 25 mils | 10-15 minutes | 6 hours |
| TC 7100 | 25 mils | 25 mils | 25-30 minutes | 6 hours |
| TC Wet Bond Mastic | 60 mils | 40 mils | 15-20 minutes | 6 hours |

* Above data is at 70°F (21°C) and 50% RH. Site conditions can increase or decrease the pot life and recoat window.

## Time to Backfill at Various Surface Temperatures

| Epoxy | 30-40°F | 50-60°F | 70-80°F | 90-100°F | 110-120°F | 130-140°F |
|---|---|---|---|---|---|---|
| TC 7000 | >6 hours | 2-3 hours | 2-3 hours | 1-2 hours | 30-45 minutes | 30 minutes |
| TC 7025 | >12 hours | 5-6 hours | 4-5 hours | 2-3 hours | 1-2 hours | 45 minutes |
| TC 7030 | >6 hours | 2-3 hours | 2-3 hours | 1-2 hours | 30-45 minutes | 30 minutes |
| TC 7100 | >12 hours | 5-6 hours | 4-5 hours | 2-3 hours | 1-2 hours | 45 minutes |
| TC Wet Bond Mastic | >12 hours | 5-6 hours | 4-5 hours | 2-3 hours | 1-2 hours | 1 hour |

Note: Determined by the time to reach a Shore D Harness reading of 75. Epoxies were stored and mixed at 70°F.



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