



CERTIFICATION / RE-CERTIFICATION EXAM FOR A PermaWrap™ INSTALLATION TECHNICIAN

Test Instructions

1. Re-certification is required annually, 12 months from the last certification date. Re-certification may be accomplished by a thorough review of the PermaWrap installation procedures and successfully completing the written re-certification exam.
2. We recommended the applicant use the PermaWrap Installation Manual during the examination. It is very important the applicant have a thorough knowledge and understanding of all the correct procedures necessary to apply the PermaWrap composite reinforcement system correctly and safely. If the applicant has any questions or does not understand a procedure, please consult your Certified Trainer or contact a WrapMaster representative for assistance.
3. A minimum score of 80% is required in order to attain certification or re-certification.
4. Fax, mail or e-mail completed examinations to:

WrapMaster, Inc.
2701 State Highway 322
Longview, Texas 75603
Fax (903) 643-8181
info@wrapmaster.us

Applicant: _____ Date: _____

Company: _____ Location: _____

Mailing Address: _____ Telephone: _____

Instructor: _____ Company: _____

Evaluation for: Certification Re-certification

True or False (T/F)

- _____ 1. Only Certified PermaWrap Installers may apply the PermaWrap reinforcement system.
- _____ 2. The PermaWrap reinforcement system is a rigid composite sleeving system, used to repair defects associated with general corrosion, dents, and gouges.
- _____ 3. The PermaWrap system shall be applied only to "blunt" defects with up to 80% wall loss.
- _____ 4. The PermaWrap reinforcement system may be used to repair cracks.
- _____ 5. All pipe coating containing "coal-tar" or "zinc" must be completely removed from the repair area.
- _____ 6. Coating containing "coal-tar" or "zinc" will help speed the cure time of the PermaWrap adhesive.
- _____ 7. PermaWrap shall be applied only to "blunt" defects. All sharp edges must be removed when repairing dents and gouges.

True or False (cont.)

- _____ 8. If Acetone, MEK or Toluene are unavailable, paint thinner may be used as a cleaning solvent.
- _____ 9. To prepare the pipe surface, the minimum cleanliness shall meet the provisions of a NACE #3 or SA 2-½ finish.
- _____ 10. The PermaWrap system is commonly used as a temporary repair for internal defects.
- _____ 11. The application of the filler in dents, gouges, etc. is to act as a load transferring material.
- _____ 12. To install a PermaWrap sleeve over a girth weld, you must grind the weld surface smooth with the pipe surface.
- _____ 13. Cracks in girth welds may be repaired with the PermaWrap or WeldWrap system.
- _____ 14. The PermaWrap system is 8 layers which when installed is ¾" thick.
- _____ 15. The PermaWrap sleeve must be extended a minimum of 1-½" beyond the edges of the defect.
- _____ 16. Although a PermaWrap system must not be applied over "coal-tar" or "zinc", these type coatings may be used after the PermaWrap adhesive has cured.
- _____ 17. Prior to sealing the edges of the PermaWrap with adhesive, all excess filler must be removed.
- _____ 18. Both the Adhesive and Filler Putty materials have a shelf life of 1 year if stored in a cool environment between 40 °F – 70 °F (5 °C – 22 °C).
- _____ 19. The PermaWrap system must be coated for protection from the environment.
- _____ 20. The adhesive and filler is provided in pre-portioned quantities with the quantity dependent on the size of the PermaWrap system to be installed.

Multiple Choice

21. The "load transfer path" is developed by the following:
- A. Filling all voids with the proprietary high compressive strength filler material.
 - B. Winding the PermaWrap sleeve around the pipe while applying adhesive.
 - C. Tightening the PermaWrap to use the "memory matrix" of the composite simultaneously causing filler material to extrude into all tented spaces.
 - D. Curing of the adhesive to form a single continuous structural reinforcement.
 - E. All of the above.
22. Which statement is **not** true?
- A. The PermaWrap reinforcement system will not arrest the corrosive mechanism or metal loss rate associated with internal corrosion.
 - B. The PermaWrap reinforcement system should never be used to reinforce "sharp" defects.
 - C. The PermaWrap reinforcement system is a permanent pipe repair for corrosion or defects in the outer pipe wall that have depths up to 80% through the pipe wall.
 - D. A Certified Installer can train anyone to install the PermaWrap reinforcement system.

Multiple Choice (cont.)

23. Using the Mix Charts, add the Activator quantity to the Adhesive according to the following:
- A. The highest humidity expected to be encountered.
 - B. The lowest temperature encountered. (ambient vs. pipe)
 - C. The highest temperature encountered. (ambient vs. pipe)
 - D. None of the above.
24. The key steps to proper PermaWrap system installations are:
- A. Sand-blasting pipe surface to a “near white” commercial finish, a NACE #3 or SA 2-½.
 - B. Applying the Filler Putty in “slight” excess to the defect area, across the “leading edge” of the Anchor Pad and on both sides of the pipe seam.
 - C. Applying plenty of adhesive.
 - D. Attaching the PermaWrap sleeve to the anchor pad and aligning the edges of the PermaWrap.
 - E. Tightening the PermaWrap reinforcement system correctly.
 - F. Sealing all edges.
 - G. A, B, D, E & F
 - H. All of the above.
25. Prior to a PermaWrap installation, the anchor pattern and cleanliness required shall meet the standard of a _____ finish or equivalent for pipe surface preparation.
- A. NACE #2
 - B. NACE #3
 - C. SA 2-½
 - D. B & C
26. The PermaWrap reinforcement system is a permanent repair method for _____ blunt defects with up to 80% wall loss.
- A. Internal
 - B. External
 - C. Both Internal and External.
 - D. None of the above.
27. When the correct quantity of activator has been added, the adhesive will typically cure in approximately _____ hours.
- A. 1
 - B. 1-½
 - C. 2
 - D. 6
28. The PermaWrap adhesive must attain a minimum hardness of _____ prior to applying a pipe coating and / or backfilling.
- A. 40 on a Shore A scale
 - B. 60 on a Shore A scale
 - C. 80 on a Shore A scale
 - D. None of the above.

Multiple Choice (cont.)

29. When butting end-to-end multiple PermaWrap systems on a straight section of pipe, the maximum gap allowed between PermaWrap's is _____ inch.
- A. $\frac{1}{4}$
 - B. $\frac{1}{2}$
 - C. $\frac{3}{4}$
 - D. 1
30. If you cannot sandblast, which of the following is recommended to prepare the pipe for a PermaWrap installation?
- A. Scrape the coating off and solvent wipe the area with Acetone or MEK.
 - B. Wire brush the area to be repaired with a hand grinder and solvent wipe.
 - C. Use a hand grinder with a 24-80 grit sanding disk then solvent wipe with Acetone or MEK.
 - D. All of the above.
31. When applying a PermaWrap system on Fusion Bond epoxy coated pipe or "thin film". Pipe surface preparation requires you do the following:
- A. Scrape the coating off and solvent wipe the area.
 - B. Sand-blast the pipe surface to a "near white" commercial finish.
 - C. Wire brush the area to be repaired with a hand grinder and clean with paint thinner.
 - D. Abrade the entire "work area" using 24-80 grit sandpaper removing all high spots and the "sheen". Then solvent wipe the area with Acetone or MEK.
32. When making a defect repair associated with a girth weld, the following limits apply:
- A. The defect depth must not exceed 50% wall loss and may only encompass 30% of the pipe circumference.
 - B. The defect depth must not exceed 80% wall loss and may only encompass 30% of the pipe circumference.
 - C. The defect depth must not exceed 80% wall loss and may only encompass 50% of the pipe circumference.
 - D. The defect depth must not exceed 50% wall loss and may only encompass 50% of the pipe circumference.
33. When making a defect repair associated with a girth weld, the following two methods are acceptable.
- A. Grind off the weld cap and install a standard PermaWrap system.
 - B. Apply a PermaWrap system on both sides of the weld, then apply the filler putty in "slight excess" over the girth weld and install a PermaWrap centered over the girth weld.
 - C. Apply the first two wraps of a WeldWrap system, then apply the filler putty in "slight excess" over the girth weld and complete the installation of the WeldWrap system.
 - D. B & C
 - E. All of the above.

Multiple Choice (cont.)

34. When making a bend repair, the maximum gap allowed between PermaWrap's on the outside of the bend is _____ inch.
- A. 1/4
 - B. 1/2
 - C. 3/4
 - D. 1
35. The PermaWrap Filler Putty is applied in "slight" excess to _____.
- A. The leading edge of the anchor pad.
 - B. All defect areas.
 - C. Both sides of long seam welds.
 - D. The ends of the PermaWrap sleeve.
 - E. A, B & C
 - F. All of the Above.
36. The PermaWrap system restores the _____ of damaged pipe to a minimum of pristine pipe conditions.
- A. Tensile Strength
 - B. Expansion Strength
 - C. "Hoop" Strength
 - D. Compressive Strength
37. For frost covered, condensing or "sweaty" pipe installations, _____
- A. Solvent wipe the pipe surface. After the solvent "flashes off" quickly attach the anchor pad.
 - B. After attaching the anchor pad, solvent wipe the pipe surface. Allow the solvent to flash, then apply the adhesive.
 - C. Wipe the surface with a dry cloth. Apply the adhesive, then apply the anchor pad over the adhesive.
 - D. A & B
 - E. A,B & C
38. Just prior to applying the leading edge of the PermaWrap to the anchor pad, _____ should be done.
- A. Put excess adhesive on the anchor pad.
 - B. Wipe the PermaWrap to be applied and check for cleanliness.
 - C. Remove the backing from the anchor pad.
 - D. A & B
 - E. B & C
39. What solvents are acceptable for pipe preparation and cleaning of the PermaWrap?
- A. Toluene
 - B. Acetone
 - C. MEK
 - D. Paint Thinner
 - E. A, B & C
 - F. All of the above

Multiple Choice (cont.)

40. Only _____ can install a PermaWrap system.
- A. Someone who can follow established procedures.
 - B. Someone with a mechanical aptitude.
 - C. Someone who is able to adjust to "on-site" conditions.
 - D. A certified installer.
 - E. A, B & C
41. After completing the installation of a PermaWrap system, seal both side-edges and the "trailing" edge of the PermaWrap sleeve with _____.
- A. Excess filler putty and "transition taper" the side-edges.
 - B. Excess adhesive and "transition taper" the side-edges.
 - C. Caulking compound and bevel the ends.
 - D. Any of the procedures above.
42. The "Reference Line" on a PermaWrap sleeve is provided to identify the _____.
- A. The area to begin applying adhesive.
 - B. The location to install the Velcro tightening pads.
 - C. The termination of the adhesive application.
 - D. B & C
43. For the best results, place the Velcro pad in the _____ of the PermaWrap sleeve and in the "best location" for engaging the Torque Bar Assembly.
- A. Top
 - B. Center
 - C. Bottom
 - D. Underside
 - E. None of the above.
44. What effect does "coal-tar" or "zinc" have on the PermaWrap adhesive?
- A. Coal-tar residue and the presence of zinc inhibit the curing and bonding properties of the Adhesive.
 - B. Coal-tar residue and the presence of zinc speed up the curing and bonding properties of the adhesive.
 - C. They have no negative effects on the adhesive.
 - D. None of the above.
45. Keep both the Adhesive container and the Plastic Paint Tray out of Direct Sunlight until ready for use, this will prevent:
- A. "Heat build-up" which may effect "working time".
 - B. The adhesive from being runny and hard to apply.
 - C. Extending the time it takes the adhesive to cure.
 - D. All of the above.

Short Answer Quiz (may use back of page to complete answer)

46. What can be done to maintain the "shelve life" of the activators?
47. Why is it important to seal the ends of the PermaWrap sleeve?
48. If the pipe temperature is less than 32 degrees F or greater than 100 degrees F, what should be done before installing the PermaWrap sleeve?
49. Why is it necessary to coat the exterior surface of a PermaWrap system installed?
- (a) Above ground
- (b) Below ground
50. What is the WrapMax program for?