

PROVIDING INNOVATIVE PRODUCTS ...



WrapMaster, Inc.

"Composite Solutions for Piping and Structures"

...FOR INDUSTRIAL & COMMERCIAL PIPE REPAIR

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Introduction

Introduction

The Company:

WrapMaster, Inc. is a leading manufacturer of composite structural reinforcement systems principally for the Pipeline and Petrochemical Industries. Based on Polymer Technology developed for Industrial Use, the WrapMaster Company expects to solve common repair problems experienced by the general consumer.

The Product:

Plug-n-WrapTM is a water-activated pre-impregnated fiberglass wrapping systems specifically tailored to meet the demands for emergency pipe repair. The emphasis of the product is the *permanent* repair of leaks without the use of any tools, glues, soldier or clamps.

The **Plug-n-Wrap**TM system is a multifunctional leak repair product. The system enables the quick and easy repair of leaks on hot and cold water lines, gas lines, sprinkler systems and more. The repair may even be applied underwater.

The Vision:

“WE are committed to the concepts of superior customer service coupled with innovative products at a reasonable price” based on the philosophy of providing products encompassing “simplicity of application, versatility of use and longevity of repair.”

Plug-n-Wrap™

Plug-n-Wrap™

(Part No. : WMP-203)

Leak Repair in Minutes!

before



after



*Good for Plastic, Metal and Poly Pipe
Use on straight runs, elbows, tees and unions
Up to 450 psi*

THE KIT COMES COMPLETE !

JUST ADD WATER !

Call our "help - line" for any Questions or
visit our website @ www.wrapmaster.us

Plug-n-Wrap™

Quick Steps

<u>Step #1</u> Evaluate Defect	<u>Step #2</u> Prep & Clean Surface	<u>Step #3</u> Mix Putty and Apply to defect	<u>Step #4</u> Soak Repair Tape in Water then tightly wrap repair area	<u>Step #5</u> Message repaired area for 2-3 minutes, allow to cure for 30 minutes
				

General Information

- The Plug-n-Wrap is safe for potable water and may be used on Plastic, Metal, Poly Pipe and Fittings. Depending on the size of the Plug-n-Wrap used and the layers applied to 450 psi.
- The Plug-n-Wrap Kit provides a quick, easy repair and applied even underwater for low pressure piping and joint or fitting reinforcement. The Plug-n-Wrap Kit comes complete - just add water (fresh or salt). Refer to the reference guide for large size pipe or higher pressures. Call our offices for more specific installation instructions or questions regarding a specific application at (903)643-8080.
- It is always recommended to use both the Repair Tape and Putty together as a system. The finished repair, once cured, should be rigid and hard with a smooth finish.
- The “Working Time” and curing of the system is affected by temperature. Allow more curing time when < 60°F and for temperatures > 80°F, it is suggested to place the materials in a cool place until time for use. “Working Time” is the time the materials remain pliable after the **MATERIALS ARE ACTIVATED WITH WATER**. The “Working Time” for both materials is about 2-3 minutes, so remember to get organized and work swiftly.
- The recommended material build-up is 1/2“ minimum and to reinforce plastic pipe couplings – apply the Repair Tape at least 2“ beyond both sides of the coupling. The tape should be spirally wound with a material thickness of about 1/4“.

Plug-n-Wrap™

Calculating Required Material to Complete Repairs

Formula for Calculating Quantity of Kits Required for a Repair

This formula calculates the length and number of rolls required to cover the length of the pipe at a specified number of layers, overlapping a recommended 50% width of the cloth.

Considerations

In general, for anticorrosive and reinforcement applications, a minimum of 6 layers of Plug-n-Wrap is sufficient.

For repairs of leaks in lines operating under 300 psi, a minimum of 15 layers of Plug-n-Wrap is required.

For repairs of leaks in lines operating up to 450 psi, a minimum of 24 layers of Plug-n-Wrap is recommended.

Formula

$$\frac{(12/\text{WIDTH OF CLOTH, INCHES}) \times (\text{CIRCUM-PIPE DIA.} \times 3.14) \times (\text{LAYERS OF WRAP}) \times (\text{LENGTH IN FT. TO BE REPAIRED})}{12 \text{ INCHES}}$$

Example:

Width of cloth

= 4"

Pipe Diameter

= 4"

Pressure <300 psi

= 15 Layers

Length of Pipe

= 1 ft.

$$\frac{(12/4) \times (4 \times 3.14) \times 15 \times 1}{12} = 47 \text{ ft.}$$

For 47 ft – 3.9 rolls of WMP-412 Plug-n-Wrap required for repair

Round up to 4 rolls needed.

Plug-n-Wrap™

Expanded Selection Guide

Plug-n-Wrap™ available in 4 sizes

WMP-212 (2 in. x 12 ft)

WMP-312 (3 in. x 12 ft)

WMP-412 (4 in. x 12 ft)

WMP-512 (5 in. x 12 ft)

Commercial Use at LESS than 300 psi

Pipe Diameter	Circumference 3.14 x Dia.	Required Wrap Size	Kits Required 15 Layers
1	3.14	WMP-212	1
2	6.28	WMP-212	1
3	9.42	WMP-212	1
4	12.56	WMP-212	2
6	18.84	WMP-412	2
8	25.12	WMP-412	3
10	31.40	WMP-412	4
12	37.68	WMP-412	4
14	43.96	WMP-512	5
16	50.24	WMP-512	6
18	56.52	WMP-512	6
20	62.80	WMP-512	7

Plug-n-Wrap™

Product Specifications

Material Description

Plug-n-Wrap is a leak repair system cured in 30 minutes for low-pressure applications up to 450 psi (dependent on number of rolls and size). The Plug-n-Wrap Kit is comprised of a flexible fiberglass mesh material impregnated with water activated polyurethane resin and an epoxy putty plug. The tape will react with the humidity in the air but should be activated with a water supply (fresh or salt). After application and total cure, a rigid case-like monolithic sheath is produced. The Plug-n-Wrap is non-toxic for potable water lines.

Temperature Limits

-20 °F to 250 °F (temperatures > 150 °F will affect pressure capability)

Set & Cure Time

Plug-n-Wrap will “set” tack free in 3-5 minutes and fully cure in 30 minutes for temperatures of 50 °F to 80 °F. Anticipate longer cure times for colder temperatures and shorter cure times for warmer temperatures.

For Longitudinal Reinforcement

A 50% overlap has been shown to be the most effective in improving longitudinal strength. When applying on a slope, it is best to fold the tape (not twisted) to change directions.

Shelf Life

2 years when stored at 40 °F to 80 °F

Plug-n-Wrap™

Surface Preparation & Application

Procedures for Surface Preparation

- Remove any loose dust or debris using sandpaper (provided in kit), wire brush or file
- Solvent wipe the area to be repaired with alcohol to remove any oily residue and dust which will affect the adhesion of the wrap to the pipe.

DO NOT open the Plug-n-Wrap foil pack until surface preparation has been completed.

Application

Prior to beginning application read the instructions carefully and gather any required tools. Plug-n-Wrap and its resin are activated by water, including humidity in the air, and is also heat sensitive. The higher the temperature, the faster the chemical reaction, directly affecting the amount of time available to apply the Plug-n-Wrap.

Helpful Tools

- Supply of clean water (salt water is acceptable)
- Clean bucket or container for water
- Disposable gloves (included in each kit)
- Sandpaper (included in each kit)
- Solvent to remove oil residue – MEK, Acetone or Alcohol (alcohol swabs included in each kit)
- Clean rags or paper towels

Once pipe preparation has been completed and all necessary tools gathered proceed to application steps.

Plug-n-Wrap™

Surface Preparation & Application

Application Steps

A Put on rubber gloves and mix the epoxy putty by removing the plastic wrapping and kneading until uniform in color. Press firmly into the defect area.

B Remove the repair tape from the sealed foil packet and soak in water for 5 seconds, no more than 20 seconds. Squeeze roll 2 or 3 times while immersed. *In extreme high temperature and/or humidity conditions, such as those in tropical climates, a portable garden type sprayer can be used. Fill sprayer with clean cool water and apply a fine mist of water in between each layer of Plug-n-Wrap as it is being applied. (* This procedure is also recommended for installation on large diameter pipe.)

C The recommended installation method is to apply the Plug-n-Wrap spirally around the pipe circumference in one direction with a **50% overlap until the entire length of cloth has been used or until the entire width of the repair area has been covered in one direction. At the end of the repair length, reverse the direction of the wrap and continue to install. NEVER change the direction of the installation in the middle of a layer. The tape may be applied either right to left or left to right. (** By using a 50% overlap, each completed length of the wrap will actually be 2 layers; a repair that call for 20 layers of pipe wrap will be completed with 10 wraps)

D For the best adhesion, it is recommended that new roll be applied over the previously applied rolls while they are still wet, not cured, thus achieving a monolithic cure along the entire width and thickness of the Plug-n-Wrap sleeve. Each layer of Plug-n-Wrap will be fully integrated into the previous layer.

E After 8 layers have been applied (4 wraps with a 50% overlap), begin to work the resin into the cloth by molding and squeezing the tape in the direction of the wrap. It is very important to work the resin into all layers of the tape. Continue to apply the Plug-n-Wrap massaging the resin into the tape, until all layers have been applied.

F When all layers have been applied, mold the resin in the direction of the wraps. The chemical reaction between the water and the resin will create a slight but noticeable increase in temperature in the composite sleeve. Excess water, including moisture on the steel surface, will rise to the outer layer of the sleeve. The resin will also have a tendency to rise to the surface. Continuously massage the resins using wetted gloves for five minutes after the resins have set or hardened.

Plug-n-Wrap™

Surface Preparation & Application

Notes

If the resin impregnated cloth begins to stiffen or harden during installation, it has begun to reach an initial cure and has passed its installation life. Do not continue to apply this roll: cut off the remaining cloth and discard.

Although Plug-n-Wrap is non-toxic and non-combustible, standard precautions should be taken: protective gloves, eye protectors and long sleeve work clothes are recommended. The resin in Plug-n-Wrap may stick to the skin and is a potential skin irritant. Please refer to the MSDS for additional information.

Store the Plug-n-Wrap in a cool dry place until its use. The bags should not be directly exposed to sunlight before their application. Plug-n-Wrap has a 2 year shelf life temperatures over 95° F (MAXIMUM).

Always try to use cool or tepid water; do not use warm or hot water as this will accelerate the initial cure time of the resin and substantially reduce the working life of the wrap.

Labor Recommendations

For repairs to land or buried lines with diameters up to 6", a single technician can make the complete installation. For diameters up to 12", 2 technicians are recommended.

For those diameters greater than 12" inches and above, 3 technicians are recommended.

Plug-n-Wrap™

Chemical Compatibility List

Plug-n-Wrap™ is chemically resistant to most chemicals and fuels.

No visible changes after 35 day immersion in the following chemicals:

Acetone
Ammonia
Sulfuric Acid (30%)
Ethyl Alcohol
Hydrochloric Acid (10%)
Mineral Spirits
Methyl-ethyl-ketone (MEK)
Toluene
Diesel Fuel
Varsol
Ethylene Glycol
Crude Oil
Hydraulic Oil
Xylenes, Mixed, o-, m- and p-

Plug-n-Wrap™ may be used with products that are compatible with polyurethane plastic.

The user must always determine the suitability of the product for its intended use and recognize that strong acids or bases may affect the durability of the repair.

Case Studies

Plug-n-Wrap: Industrial Applications

February 9, 2000

Koch Sweet Gas Compressor Station – East Texas

A schedule 40, Gr. B carbon steel 1” sweet gas return line for the meter station had a leak due to external corrosion. The gas line operating at 20 psi had an axial defect length of approximately 18” with several areas having complete wall loss. To repair the line according to previous methods would have resulted in a larger excavation area and hot-working plus additional equipment. To used the Plug-n-Wrap product, the line was temporarily shutdown for repair. After the pipe section was abraded and solvent wiped, Six (6) Plug-n-Wrap kits (#WMP-212: 2” x 12 ft) were applied in accordance with procedures. The total repair time was approximately 45 minutes. The line is still in operation.

March 15, 2000

Eastman Chemical Company – Longview, Texas

The East Texas Chemical Plant processes Olefin products for the manufacture of thermoplastics. Within the process, a low carbon steel 4” flanged stub had thinning wall in the welded area of the flange resulting in a hole approximately a 1/16” in diameter in the weld. The weld zone was attacked internally by mixture of solvents and Sulfuric Acid and due to the nature of the weld zone degradation, the entire weld was suspect. Based on production schedules, a maintenance shutdown was not possible until October 2000. The Plug-n-Wrap product was chosen as an alternative after verification of products’ chemical resistance. The flange bolts were an obstruction requiring greater attention to surface area preparation. After surface prep, four (4) Plug-n-Wrap kits (#WMP-412: 4” x 12 ft) were applied within 15 minutes and allowed to cure for 30 minutes. The repair has enabled the continued operation of the process line

June 22, 2000

Eastman Chemical Company – Longview, Texas

The East Texas Chemical Plant processes Olefin products for the manufacture of thermoplastics. A 20” diameter pressure vessel for the return water of a Cooling Tower had a pin-hole leak at the interface of a 12” diameter stub. The vessel operates at 50 psi - 150 °F. After surface preparation, nine (9) Plug-n-Wrap kits (#WMP 412 – 4” x 12 ft) were applied and the vessel continues to operate. Total repair time was 60 minutes.

Additional Case Studies may be provided upon request

Summary

Product Benefits

Plug-n-Wrap™

- ❖ **Kits come Complete (NO ADDITIONAL TOOLS REQUIRED)**
- ❖ **Make Permanent Repairs in Minutes**
- ❖ **Ease of Application**
- ❖ **Versatile Uses** (straight sections, bends, elbows, tees, ect.)
- ❖ **Bonds to a Range of Materials** (plastic, metals and polyethylene)

Alternate Uses

Plug-n-Wrap™

- ❖ Pipelines
- ❖ Plants
- ❖ Municipal Water
- ❖ Gas Distribution Lines
- ❖ Oil & Gas Gathering
- ❖ Irrigation Lines
- ❖ Marine Applications