



REMR MATERIAL DATA SHEET CM-PC-1.15  
 CONCRETE PATCHING MATERIAL: WATERPLUG

## 1. NAME

Waterplug

tie wires, wood or steel separators; grouts and seals around pipe, anchor bolts, conduits, etc.

## 2. MANUFACTURER

Thoro System Products, Inc.  
 7800 NW 38th Street  
 Miami, Florida 33166  
 Telephone: 305-592-2081

Limitations: Very cold or very hot weather will retard or quicken Waterplug setting time. Neither harms its ultimate strength or effectiveness. But special care must be used in mixing and applying. Normally at 70°F (21.1°C) both Waterplug and mixing water should be lukewarm--feel neutral to the touch. Waterplug will set in 3 to 5 min.

## 3. DESCRIPTION

A cement-base, quick-set, hydraulic compound which instantly stops running water or seepage through concrete or masonry walls and floors. It actually becomes harder and more resistant when it is subjected to constant water pressure. Packaged in dry powder form, Waterplug requires only the addition of clean water to be ready for use. Waterplug contains no metals, will not shrink or oxidize, and seals out water for the life of the structure. Waterplug sets in three to five minutes, depending upon the temperature of the mixing water and the surface to which it is applied. Low temperatures will retard the set; high temperatures will accelerate the set.

Above normal temperatures (from 70° to 100°F (21.1° to 37.7°C)) cause Waterplug to begin to set very quickly. Material should not be heated above 70°F (21.1°C), and mixing water over 100°F (37.7°C) should never be used. Otherwise, set begins immediately, and structural strength lessens, unless Waterplug is placed within 30 to 60 seconds after mixing. In extreme heat, ice water can be used for mixing to slow setting action.

## 4. USES &amp; LIMITATIONS

Uses: Waterplug stops running water or seeping through cracks and holes in concrete or masonry walls of basements, elevator pits, wells, mines, tunnels, cofferdams, sewers, cisterns, tanks; seals crack at junction of floor and wall; seals construction faults in concrete and holes left by

In below normal temperatures (from 40°F (4.4°C) to -40°F (-40°C)) Waterplug will not set until the regulating pigments have heated mixing water and all ingredients to normal. If possible, Waterplug should be stored at normal temperature. Heating will not set the dry powder, so a blowtorch may be used to warm the material to 70°F (21.1°C). (Spread powder on mortarboard and keep stirring and turning.) In extreme cold, a blowtorch should also be used to warm the area where Waterplug is to be applied.

## 5. MANUFACTURER'S TECHNICAL DATA

### Physical properties:

<u>Test*</u>	<u>Method</u>	<u>Results, psi</u>
Compressive	ASTM C 109	20 min - 1,800
		1 day - 4,000
		7 days - 5,000
		28 days - 5,500
Tensile	ASTM C 190	7 days - 300
		28 days - 350
Flexural	ASTM C 348	7 days - 600
		28 days - 1,500

\* All tests conducted by accredited independent laboratories. Complete test results available upon request.

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Coverage: 1 lb will fill 17 cu in., or a crack 3/4 by 3/4 by 30 in. (.45 kg will fill 278 cc, or a crack 1.9 by 1.9 by 76.2 cm).

## 6. MANUFACTURER'S GUIDANCE FOR APPLICATION

### Preparation, Mixing, and Placing:

Always undercut or cut square; do not use V cut. Open crack or hole by cutting to a minimum depth and width of 3/4 in. (1.9 cm). Flush away all cuttings and dirt. Mix Waterplug with clean water only. Add just enough water to make Waterplug of putty consistency. Do not mix more than can be placed in 3 min. Place Waterplug with minimum working or rubbing. Force Waterplug into crack or hole by pushing firmly; use maximum pressure. Do not brush or trowel over surface; crack will not seal. Keep damp for at least 15 min.

To seal crack at junction of floor and wall in existing construction: Cut out crack at least 3/4-in. (1.9 cm) wide and deep, cutting back into wall slightly. Flush away all cuttings and dirt. Force Waterplug into prepared crack with a round tool and smooth out. Form cove at junction.

To stop streams of running water through walls: Cut out crack or hole to a minimum depth and width of 3/4 in. (1.9 cm). Undercut, if possible. Start at top and force Waterplug into crack. At points of greatest pressure, do not place Waterplug into opening immediately. Hold in hand or on trowel until slight warmth or drying occurs. Then press Waterplug firmly into opening. Do not remove trowel or hand too soon. After stopping active water, cut off patch even with surrounding wall surfaces.

To repair leaking mortar joints and cracks in masonry walls or cracks in concrete walls: Cut out defective mortar joints or cracks to a minimum width and depth of 3/4 in. (1.9 cm). Undercut, if possible, Force Waterplug into crack and keep damp for at least 15 min.

For holes, blisters, patches, honeycomb and other construction faults in concrete walls: Remove all tie wires, wood or steel separators by cutting back from surface to depth of 1 in. (2.5 cm). Mix Waterplug to consistency of mortar and fill all holes, blisters, patches, honeycomb and other construction faults flush with surrounding surfaces. Scratch the finish for later applications. (If there is

not active water present, Thorite patching mortar can be used.)

For anchoring bolts or metal posts in concrete or masonry: Drill hole deep enough to properly secure bolt or post and large enough so there is at least 1/2 in. (1.27 cm) on all sides of bolt or post. Fill hole with Waterplug and tamp so that entire hole is full. Immediately center bolt or post over hole and force into the Waterplug. Tamp Waterplug firmly around bolt or

post; keep moist for 15 min. Apply no pressure to bolt or post for five hours.

7. SUPPLEMENT TO MANUFACTURER'S GUIDANCE FOR APPLICATION

Rapid setting of material requires a large number of small batches for large patches. This layering the material could present problems if wetting and drying or freezing and thawing occur.

8. CORPS OF ENGINEERS' EVALUATION

\* This material was evaluated by Singleton Laboratories, TVA, through a support agreement with US Army Engineer Waterways Experiment Station.

<u>Property</u>	<u>Test Method</u>	<u>Results</u>
Compressive strength, psi	ASTM C 109	6,410
Slant-shear bond strength, psi	ASTM C 882	
Dry surfaces		710
Wet surfaces		2,050
Bond capacity in direct tension, psi	**	130
Bond capacity under flexural stress, psi	ASTM C 293	880
Underwater abrasion loss, %	CRD-C 63	14
Resistance to cycles of freezing and thawing, % of original weight after 312 cycles	ASTM C 666 Procedure A	100
Impact resistance, in.-lb	--	255
Coefficient of thermal expansion, millionths/°F	--	4.0

\* Best, Floyd J., and McDonald, James E. 1990. "Spall Repair of Wet Concrete Surfaces," Technical Report REMR-CS-25, US Army Engineer Waterways Experiment Station, Vicksburg, MS.

\*\* Causey, F. E. 1984. "Preliminary Evaluation of a Tension Test for Concrete Repairs," Report Gr-83-14, Department of the Interior, Bureau of Reclamation.

## 9. ENVIRONMENTAL CONSIDERATIONS

Reasonable caution should guide the preparation, repair, and cleanup phases of activities involving potentially hazardous and toxic chemical substances. Manufacturer's recommendations to protect occupational health and environmental quality should be carefully followed. Material safety data sheets should be obtained from the manufacturers of such materials. In cases where the effects of a chemical substance on occupational health or environmental quality are unknown, chemical substances should be treated as potentially hazardous toxic materials.

## 10. AVAILABILITY AND COST

Waterplug is available in the following amounts: 2-1/2-lb (qt) can; 10-lb (gal) can; 50-lb steel pail (1.13-kg can; 4.5-kg can; 22.7-kg steel pail). The 50-lb pail is approximately \$45.00.