PERMACAST® PL-8,000 Technical Data Sheet

CENTRIFUGALLY CAST CONCRETE PIPE

High strength, factory blended cementitious liner material designed for renewal of underground concrete storm and sanitary sewer pipe creating a new pipe within the old.

It is the intent of this product to provide for the waterproofing, sealing, structural reinforcement and corrosion protection of existing underground sewer pipe by the safe, quick and economical application of a uniform cementitious layer of special mortar that cures in place to form an interior hardened shell.

PHYSICAL PROPERTIES

Color	Gray
Special Handling	None-keep dry
Shelf Life	One year
Water Demand	118 - 128 fl. oz./bag
Coverage	50# bag yields .42 cu. ft.
Working Time	30 minutes

NOMINAL VALUES

Set Time at 70°F ASTM C-403	
Initial Set	Approx. 170 minutes
Final Set	Approx. 300 minutes
Compressive Strength ASTM C-109	
24 hours	4,000 psi
28 days	10,000 psi
Flexural Strength ASTM C-293	
24 hours	1,200 psi
28 days	1,530 psi
Slant Shear Bond ASTM C-882	
28 days	2,900 psi
Tensile Strength ASTM C-496	
28 days	835 psi
Sulfate Resistance ASTM C-267	No damage
*5% Solution H_2SO_4	30 days

*Samples received two coats of CS Identifier 300 sf per gallon coverage rate.

Freeze Thaw ASTM C-666	300 Cycle Pass
Freeze Thaw Chloride Solution	300 Cycle <1%
Modulus of Elasticity ASTM C-469	
28 days 4-inch cylinder	5.26 X 10^6 psi
Rapid Chloride Permeability ASTM C-1202 (AASHTO T-277)	< 50 Coulombs

The Physical properties contained herein were obtained under laboratory conditions at 72° F. Physical properties obtained under field conditions may vary do to environmental variables. Data are subject to reasonable deviation.

GENERAL

This information establishes the minimum standard for material and method of application for restoring and sealing leaking and deteriorated sewer pipe, culvert pipe and manholes by centrifugally casting PERMACAST® PL-8,000, onto its interior in one or more passes at a specified thickness.

MATERIAL

The material, PERMACAST® PL-8,000, is a high strength, high build, abrasion resistant and corrosion resistant mortar, based on advanced cements and additives. When mixed with the appropriate amount of water, a paste-like material will develop which may be sprayed, cast or pumped into any area ¼ inch and larger.

The hardened liner is dense and highly impermeable. The above performance is achieved by a complex formulation of mineral, organic and densifying agents and sophisticated chemical admixtures including rust inhibitors. Graded quartz sands are used to enhance particle packing and further improve the fluidity and hardened density. The composition also possesses excellent thin-section toughness, high modulus of elasticity and self-bonding. Fibers are added as an aid to casting, for increased cohesion and to enhance flexural strength.

The water content may be adjusted to achieve consistencies ranging from plastic to modeling clay. Despite its workability, the mortar has good wet adhesion and does not sag or run after placement. The mortar may be cast against soil, metals, wood, plastic or other normal construction material.

EQUIPMENT

Mortar mixers, compressors and pumps are standard commercial models. Please contact AP/M for equipment specifications. The high speed, rotating applicator device is provided with the material to certified applicators.

MIXING
Combine 50 pounds of the packaged dry mix with 118-128 fl. oz. of clean (50°-70°F) water while mixing with a high-speed shear mixer until proper consistency is obtained. Continue to agitate the mortar to prevent thickening beyond the desired fluidity. The working time is approximately 30 minutes depending upon conditions.

PREPARATION
Pressure wash the interior surface with a high-pressure water-blast sufficient to remove all laitance and loose material and flush debris from the pipe. Plug active leaks and fill voids; use PL-12,000 for invert/base replacement.

APPLICATION
Position the rotating casting applicator within the center of the sewer pipe and commence pumping the mixed mortar. As the mortar begins to be centrifugally cast evenly around the interior, retrieve the applicator head at the best speed for applying the thickness that has been selected. If flows are interrupted for any reason, simply arrest the retrieval of the applicator head until flows are restored. The retrieval speed can be easily varied to create different thickness as the condition may dictate to provide sufficient strengths. Because of the even application throughout the circumference, thickness may be verified at any point. If additional thickness is desired at any level, simply place the rotating applicator at that level and recommence pumping and retrieval until that area is thickened. Built-in bonding agents allow additional layers to be applied at any time.

The pressure application from the centrifugal casting of the mortar produces a finely textured surface that requires no additional troweling or finishing

CURING
Use an ASTM C309 conforming curing compound or 1315 Sealer as required in the standard.

QUALITY ASSURANCE & ACCEPTANCE
All work shall be performed by factory certified applicators only. Mortar cube test samples for material strengths may be taken randomly as directed by the inspector for testing at the owner's expense. Thickness can be verified with a wet gage at any random point of the new interior surface. Any areas found to be thinner than minimum tolerances shall immediately receive additional material. Visual inspection should verify a leak-free, uniform appearance.

SAFETY
Observe OSHA standards for confined space entry.

WARRANTY and DISCLAIMER
The technical data herein provided is compiled from laboratory specimens in accordance with ASTM Standards. Test results from specimens made in the field may vary. Although this data is believed to be reliable, AP/M PERMAFORM makes no warranty express or implied, and further disclaims any liability as to the suitability of this information to a particular end use. This product is intended for use solely by our certified applicators.

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AP/M Permaform
P.O. Box 555 • Johnston, IA 50131
800-662-6465
515-276-9610
515-276-1274 FAX

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