



REMR MATERIAL DATA SHEET CM-PC-1,23
 CONCRETE PATCHING MATERIAL: PYRAMENT 505

1. NAME
 PYRAMENT 505
 "Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs." (Type-very rapid hardening mortar.)
2. MANUFACTURER
 Lone Star Industries, Inc.
 Pyrament Division
 P.O. Box 2148
 Houston, TX 77252
 Telephone: 713-921-4861
3. DESCRIPTION
 PYRAMENT 505 Rapid Concrete Repair Material is a packaged mortar that requires only the addition of mixing water to produce a durable, very rapid strength-gaining material for the permanent repair of concrete.
4. APPLICABLE SPECIFICATIONS
 PYRAMENT 505 meets or exceeds the requirements of ASTM C 928-80
5. USES
 PYRAMENT 505 can be used for rapid restoration of concrete on airport runways, aprons, and taxiways, on highways and bridge decks, on industrial floors, structural members, and for new construction when high early strength is needed.
6. MANUFACTURER'S TECHNICAL DATA
 The results for PYRAMENT 505 both as a mortar and as a mortar extended 100 percent by weight with 1/2-in. gravel are given. Test results are for laboratory tests performed at standard conditions.

	<u>Mortar</u>	<u>Mortar & Gravel</u>
PYRAMENT 505, 1b	50.0	50.0
1/2-in. Gravel, 1b	----	50.0
Water, 1b	4.8	4.8
Yield, cu ft	0.40	0.70
Consistency, (15 min)	ASTM C 109-86 105%	ASTM C 143-78 3 in.
Time of setting	ASTM C 266-86	ASTM C 403-85
Final (min)	30	30

(Continued)

	<u>Mortar</u>	<u>Mortar & Gravel</u>
Compressive strength, psi	ASTM C 109-86	ASTM C 39-86
2 hr	2,500	2,000
3 hr	3,500	2,500
1 day	6,000	5,500
7 days	10,000	9,000
Flexural strength psi	ASTM C 293-79	ASTM C 293-79
3 hr	600	400
1 day	1,000	700
7 days	1,500	900
Modulus of elasticity, psi	ASTM C 469-83 -----	ASTM C 469-83 5.5MM
Freeze/Thaw durability 300 cycles, Durability factor	ASTM C 666-84 (Procedure A) 96	ASTM C 666-84 (Procedure A) 96

7. MANUFACTURER'S GUIDANCE FOR APPLICATION

Surface preparation: When repairing a spalled or deteriorated area of concrete, chip or saw cut the spalled area to a depth sufficient to remove all deteriorated concrete. It is recommended that edges be squared and depth be a minimum of 1/2-in. Feathering is not recommended. Clean and remove all oil, grease, dirt, and loose debris from the area to be repaired. Dampen the repair area with clean water just prior to beginning the mixing cycle.

Recommended mixing procedure: Use a mortar or high intensity mixer with at least twice the volume of the amount of mortar to be mixed. Locate the mixer close to the repair area. Make sure the mixer is clean of any foreign material, including water. Determine the number of bags of mortar to be mixed in each batch. (Each bag of PYRAMENT 505 will yield 0.4 cu ft of mortar.) Use only freshly opened bags, as performance may be affected by using mortar from previously opened bags. The mixture may be extended

with coarse aggregate. Follow the instructions printed on each 50-lb package. Measure the total mixing water required for the batch. Use 4.25 to 5.0 lb of water for each 50-lb bag to be mixed. Accurate measurement of water is very important. Charge the mixer with 1/2 of the bags to be mixed, and then add all the water. Mix for 1-1/2 min, and then add the second half of material. Mix for 5 to 8 min until a uniform mixture is achieved. Do not add any other materials to the mixture.

Placing: Place the material into the dampened, prepared area, from one side to the other, working the material into the sides and bottom of the repair area to assist in satisfactory bonding. Screed and level to the proper elevation of existing concrete. Finish by trowel to seal edges, surface and saw cuts. Do not retemper mixture by adding water.

Curing: Normal, ambient concrete curing methods should be followed. Approved curing compounds should provide satisfactory results and are recommended.

8. CORPS OF ENGINEERS' EVALUATION

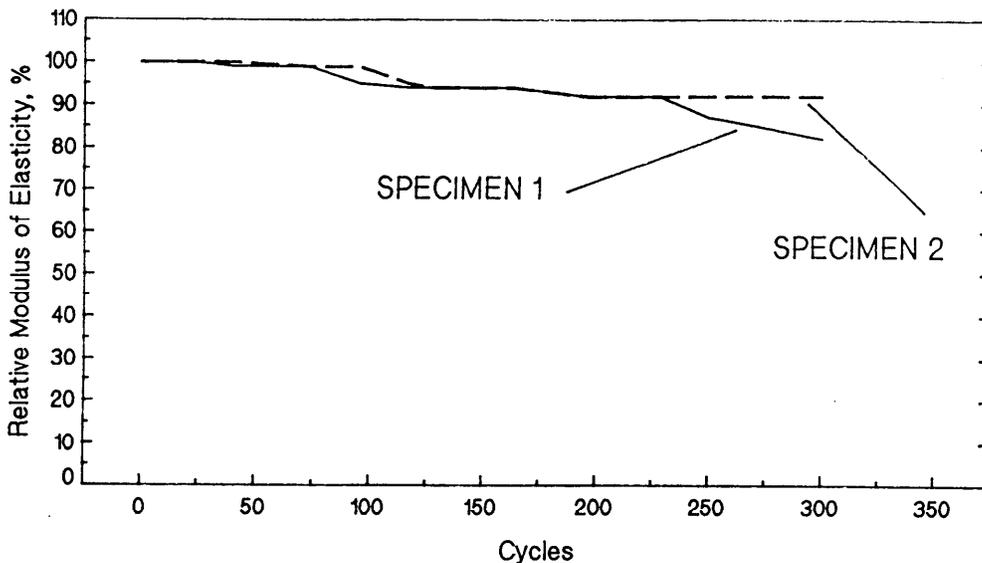
Technical data:

<u>Properties</u>	<u>Test Method</u>	<u>Results</u>
Compressive strength, psi	ASTM C 109	
	2 hr	2,610
	3 hr	3,410
	4 hr	3,850
	ASTM C 39	
	24 hr 28 days	6,120 12,180
Modulus of elasticity, psi	ASTM C 469	
	1 day	2.35×10^6
	28 days	2.67×10^6
Flexural strength, psi	ASTM C 78	
	3 hr	450
	24 hr	480
	28 days	835
Bond to concrete, psi	ASTM C 882	
	24 hr	2,380
	28 days	3,560
Shrinkage, percent	GR-83-10*	
	(unconfined condition) ¹	0.096

* Bureau of Reclamation Technical Report Standard.

¹ An exotherm of 35°F was recorded on the shrinkage specimen using a mixture of 4.5 lb of water per 50-lb bag of material.

Rapid Freezing and Thawing ASTM C 666,
Relative Dynamic Modulus of
Elasticity, %



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 COSTS

Availability: PYRAMENT 505 is manufactured by Pyrament/Lone Star Industries in Houston, Texas. It is manufactured under U.S. Patent 4,349,386 and other patents issued and pending.

Cost: Contact Pyrament for pricing.

11. TECHNICAL SERVICES

Technical assistance is provided by the Pyrament Technical Services Department on request.