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Subject: Construction Materials Testing
Penetron Admix® Mix Designs, ASTM C39 and DIN 1048:5 (EN 12390-8) Water Permeability Results
PSI Project Number 08122128

Two concrete mix designs were batched on the same 4500 psi concrete mix with a 0.45 water/cement ratio. Mix 1P included the addition of Penetron Admix at the recommended dosage rate of 1% by weight of cement materials. Mix 2P was the control and did not include the Penetron Admix material.

Material	Source	Mix 1P Weight in lbs. (kg)	Mix 2P Weight in lbs.(kg)
Cement Type I	Essroc	564 (256)	564 (256)
#57 Limestone	Coolspring	1720 (780)	1720 (780)
Sand	Shelly Sand	1329 (603)	1329 (603)
Water	-	255 (116)	255 (116)
Air %	6%	0	0
Penetron Admix	Penetron USA	5.64 (2.56)	0
Total Batch Weight	-	3873.64	3868

Concrete samples were cast at the time of batching. The compressive strength was tested at 7 days and 28 days. Following is a summary of the ASTM C39 compressive strength test results at 7 and 28 days for Mix 1P and Mix 2P.

Sample	7-Day Compressive Strength (psi)	28-Day Compressive Strength (psi)
Mix 1P (Penetron Admix Treated)	5,595	6,300
Mix 2P (Control)	5,020	5,895
Percent Increase Treated over Control	11.5%	6.9%

When curing was complete, the concrete samples were exposed to a driving pressure of 72.5 psi (0.5 N/mm^2) in accordance with DIN 1048 Part 5M Water Permeability for a period of 72 hours. The samples were removed from the permeability apparatus and each was split down its center. The amount of water penetration was immediately marked and measured. The maximum depth of penetration and the average depth of penetration are given in the following table and chart.

Sample	Maximum Water Penetration Depth in inches (mm)	Average Water Penetration Depth in Inches (mm)
1P (Penetron Admix Treated)	No Water Penetration	No Water Penetration
2P (Control)	1.026” (26 mm)	0.695” (18 mm)

Conclusions:

Based on the ASTM C39 and DIN 1048:5 Water Permeability testing performed, we note the following:

- Penetron Admix treated samples exhibited an increase in compressive strength compared to the control.
- The use of Penetron Admix eliminated all visible water penetration into the treated sample.