

PROJECT NO: 325018.6

Date: June 23, 2005

TESTING OF CONCRETE WITH SYNTHETIC FIBERS

INTRODUCTION:

This report presents the results of out laboratory testing of concrete with Polymer Group, Inc. (PGI) Genesis[®] SF Fibers, 1 ½" cut length (5.0 lb/yd³ dosage rate). The scope of our testing work was as follows:

1. Perform laboratory concrete trial batching of concrete with the PGI Genesis[®] SF Fibers 1 ½" cut length, according to ASTM:C1399 for the determination of the post peak flexural properties.
2. Prepare a written report outlining our test results.

SUMMARY OF TEST RESULTS:

The following is a summary of the test results:

<u>Property</u>	<u>4000psi Concrete</u>
Average Residual Strength, MPa (psi)	1.45 (210)

¹The results are the average of three samples.

TEST PROCEDURES:

The testing was initiates on May 25, 2005 and subsequent dates using applicable portions of ASTM:1399-98, "Test Method for Obtaining Average Residual-Strength for Fiber Reinforced Concrete". The concrete test mixture was derived using the procedures outlined in ASTM:C494 Sections 11-15. The mix design used is included in the Concrete Materials section of this report along with the other pertinent information. Additional ASTM procedures were also used in conjunction with this test program.

SYNTHETIC FIBER DATA:

Synthetic Fibers – PGI Genesis[®] SF Fibers, 1 ½" cut length
Date Submitted – March 30, 2005
Application/mixing – Min. 4 minutes

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CONCRETE MATERIALS:

Concrete Trial Mixtures

Mix Number	1
Mixture Type	Fiber
Cementitious Content, kg/m ³ (lbs/yd ³)	306.7 (517)
Slump, mm (in.)	50.8-76.2 (2-3)
Nominal Coarse Aggregate, mm (in.)	19.2 (3/4)
Air Content, %	n/a

Materials

Cementitious	Type I Portland Cement (ASTM:C150)
Finer Aggregate	Shiely Aggregates Inc. (Natural Sand Meeting the Requirements of ASTM:C33 and C494)
Coarse Aggregates	Shiely Aggregates Inc. (Limestone Size Number 57 Meeting the Requirements of ASTM:C33 and C494)
Admixtures	Genesis [®] SF 1 ½" Fiber

Batch Weights, m³ (yd³)

Mix Number	1
Mixture Type	Fiber
Portland Cement, kg (lbs)	306.7 (517)
Admixture: PGI Genesis [®] SF 1 ½" Fiber, kg (lbs)	2.97 (5.0)
Fine Aggregate, kg (lbs)	810.1 (1,365)
Total Coarse Agg., kg (lbs)	1008.9 (1,700)
Water, kg (lbs)	172.1 (290)

Mix numbers 1 was used in casting of the samples

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TEST RESULTS:

Concrete Test Data

Mix Number	1
Mixture Type	Fiber
Slump, mm (in.)	31.8 (1-1/4)
Air Content, (%)	2.8
Unit Weight, Kg/m ³ (lbs/ft ³)	2354.7 (147.0)
Compressive Strength, Mpa (psi)	31.58 (4,580)

All of the samples were cast into beam molds.

The 28 day sample compressive strength was 6250 psi.
The samples were moist cured for 27 days and tested at 28 days from casting.

Post Peak Flexural Strength – ASTM:C1399

Standard Values

Sample Number	Sample Width, in.	Sample Depth, in.	Test Span, in.	Load Deflection, lbs				ARS, psi
				0.02 in.	0.03 in.	0.04 in.	0.05 in.	
1A	4.10	4.06	12.00	1098.1	1173.5	1181.1	1174.4	205
1B	4.05	4.05	12.00	1290.2	1368.5	1367.1	1376.4	244
1C	4.15	4.00	12.00	969.8	1001.5	1008.7	1030.0	181


Average	4.10	4.04	12.00	1119.4	1181.2	1185.6	1193.6	210
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Metric Values

Sample Number	Sample Width, in.	Sample Depth, in.	Test Span, in.	Load Deflection, lbs				ARS, MPa
				0.02 in.	0.03 in.	0.04 in.	0.05 in.	
1A	104.1	103.1	304.8	4884.6	5220.0	5253.8	5224.0	1.42
1B	102.9	102.9	304.8	5739.1	6087.4	6081.1	6122.5	1.68
1C	105.4	101.6	304.8	4313.9	4454.9	4486.9	4581.6	1.25

Average	104.1	102.5	304.8	4979.2	5254.1	5273.9	5309.4	1.45
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STORK TWIN CITY TESTING CORPORATION


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