TRELLEBORG
ENGINEERED SYSTEMS

NPC – Concrete Reinforcement Fiber

Technical Specifications

The following test data was produced by an independent laboratory approved by the International Conference of Building Officials.

Introduction:

The scope of our testing was as follows:

1. Perform laboratory concrete trial batching of concrete with and without fiber reinforcing for comparison in the following areas;
   a. Flexural Strength
   b. Compressive Strength
   c. Freeze/Thaw Durability
   d. Plastic Shrinkage Testing

2. Prepare a written report stating whether the product meets applicable portions of the proposed ICBO Acceptance Criteria for Synthetic Fiber-Reinforced Concrete for the areas listed.

Summary of Test Results:

Test	Control	Test – Fibers	% of Control
Flexural	670 psi	675 psi	101%
Compressive	4270 psi	4450 psi	104%
Freeze/Thaw Durability	96.9°F	98.6°	102%
Crack Value	0.341 in	0.164 in.	54.9% (reduction)

Test Procedures:

The testing was initiated using applicable portion of the proposed ICBO Acceptance Criteria (Section V. Test Program). Based on our understanding of Section V. Test Program the comparative test mixes and procedures are those that are outlined in U.B.C. Standard No. 26-9 sections 26.908 through 26.912 or those attached in the appendix of the document (Plastic Shrinkage Testing). Applicable portions of these sections were used except for the variation in the trial mixture used for the plastic shrinkage. A non-air entrained mix design with an increased water/cement ratio (0.50 to 0.61) and initial mix temperatures in excess of 90°F was used to help precipitate crack formation.

Bidco, Inc.
St. Joe Drive & Lewis Street, P.O. Box M, Park Hills, MO 63601 U.S.A.
Tel: 573-431-1619 800-442-0141 Fax: 573-431-1035 www.trelleborg.com/npc

Test Results:

Based on the test results, the Bidco Fiber meets the acceptance criteria in the following area for the ICBO "Acceptance Criteria for Concrete with Synthetic Fibers".

A. **Flexural Strenth — ASTM C78**

Control (Plain)	Test (Fibers)
620 psi	685 psi
700 psi	640 psi
695 psi	705 psi
Avg: 670 psi	Avg: 675 psi

B. **Compressive Strength — ASTM C39**

Control (Plain)	Test (Fibers)
4240 psi	4470 psi
4330 psi	4310 psi
4230 psi	4570 psi
Ave: 4270 psi	Ave: 4450 psi

C. **Freeze/Thaw Durability — ASTM C666 Procedure A**

Control (Plain)	Test (Fibers)
Average	Average
Durability Factor – 96.9	Durablity Factor – 98.6

D. **Plastic Shrinkage Cracking ICBO Appendix B***

Control (Plain)	Test (Fibers)
Cracking Value (in.) 0.416	Cracking Value (in.) 0.287
	Cracking Ratio: 69.0%
	Crack Reduction: 31.0%

(Elapsed time: 5 days)

Control (Plain)	Test (Fibers)
Cracking Value (in.) 0.312	Cracking Value (in.) 0.184
	Cracking Ratio: 59.0%
	Crack Reduction: 41.0%

(Elapsed time: 6 days)

Control (Plain)	Test (Fibers)
Cracking Value (in.) 0.296	Cracking Value (in.) 0.022
	Cracking Ratio: 7.4%
	Crack Reduction: 92.6%

Crack Reduction (average of 3) 59.4% (NEn. 40%)

The size of panel tested was a normal 22 11/16" in length by 13 5/16" in width with a riser as described in Appendix B.

Reference:
ICBO Report No. 5013
ASTM C1116

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