

# TEST RESULTS: Flexural Strength

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**Summary:** The addition of ABC Fibers does not adversely affect flexural strength of concrete. Additionally, ABC Fibers do provide acceptable Post-peak flexural strength.

**Background:** ABC Fibers were tested for Flexural Strength and Post-Peak Flexural Strength in accordance with ICBO AC32, Test Program 5.1 and 5.7.2, ASTM C78, and ASTM C1018. The tests were performed in 1998. Data below reflect the average of 3 samples.

<b>Data:</b>	<b>Control</b>	<b>Fiber</b>
Age of Samples	7 Days	7 Days
Strength, psi	580	605
Age of Samples	28 Days	28 Days
Strength, psi.	640	650
<b>Post Peak Flexural Strength</b>		
Age of Samples	28 Days	28 Days

Flexural Strength Testing was done by :

Thompson Engineering  
3707 Cottage Hill Road  
Mobile, AL 36691

Test Supervisor:  
Mr. Charles G. Canning, Jr  
Concrete Materials Manager

The tests began in February of 1998 and were completed with the test report issued on June 2, 1998 as Thompson Engineering Job #9840000600. Mr. Canning can be reached at 334.666.2443.

The goal of the flexural strength test was to determine of the addition of ABC Fibers to concrete adversely affected concrete. The test was conducted in accordance with ICBO AC32, Test Program 5.1 and 5.7.2. To meet the acceptance criteria of ICBO, the three samples with fiber must be equal to the flexural strength of the control specimens. Both specimens must be aged 28 days in compliance of ASTM C1018. The tests comply with the applicable tests of ASTM C78. The condition of acceptance of the post-peak flexural strength test is that the specimens with fibers must have a post-peak flexural strength of 50 psi or 20% of the peak stress, whichever is less.

The ABC Fibers were added to the mix at a rate of 1.5 pounds per cubic yard of concrete. Testing was performed on three control specimens and three specimens with ABC Fibers. All specimen were aged 28 days.

In summary, the addition of ABC Fibers did not adversely affect the flexural strength of concrete. The addition of ABC Fibers does provide an excess of 50 psi in post-peak flexural strength.

**Materials:**

**Cement:** Holnam, Inc. I/II  
**Fine Aggregate,** Friese  
**Coarse Aggregate,** Martin Marrietta  
**Water:** Mobile City  
**Air Entrainment:** None  
**Water Reducer:** None.

**Mix Design: ( pounds per cubic yard )**

<b>Cement</b>	<b>564</b>
<b>Fly Ash</b>	<b>0.0</b>
<b>Fine Aggregate</b>	<b>1,373</b>
<b>Coarse Aggregate</b>	<b>1,650</b>
<b>Water</b>	<b>270</b>
<b>Air Entrainment</b>	<b>0.0</b>
<b>Water Reducer</b>	<b>0.0</b>

	<b>Design</b>	<b>Control</b>	<b>Fibers</b>
<b>Slump, in.</b>	<b>2.0 – 4.0</b>	<b>4.0</b>	<b>3.0</b>
<b>Air Content, %.</b>	<b>1.0 – 2.0</b>	<b>2.1</b>	<b>1.9</b>
<b>Unit Weight, pcf.</b>	<b>142.9</b>	<b>143.0</b>	<b>143.0</b>
<b>Concrete Temp, oF.</b>		<b>72</b>	<b>70</b>
<b>Air Temp, oF.</b>		<b>74</b>	<b>72</b>

**Flexural Strength, psi.**

Age of Samples:	<b>Control</b>	<b>Fibers</b>
7 days, Average	<b>580</b>	<b>605</b>
28 days		
Sample 1	<b>635</b>	<b>645</b>
Sample 2	<b>640</b>	<b>650</b>
Sample 3	<b>645</b>	<b>660</b>
<b>Average</b>	<b>640</b>	<b>650</b>

**Post Peak Flexural Strength, psi.**

<b>28 Days, psi.</b>	<b>0</b>	<b>68.3</b>
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