

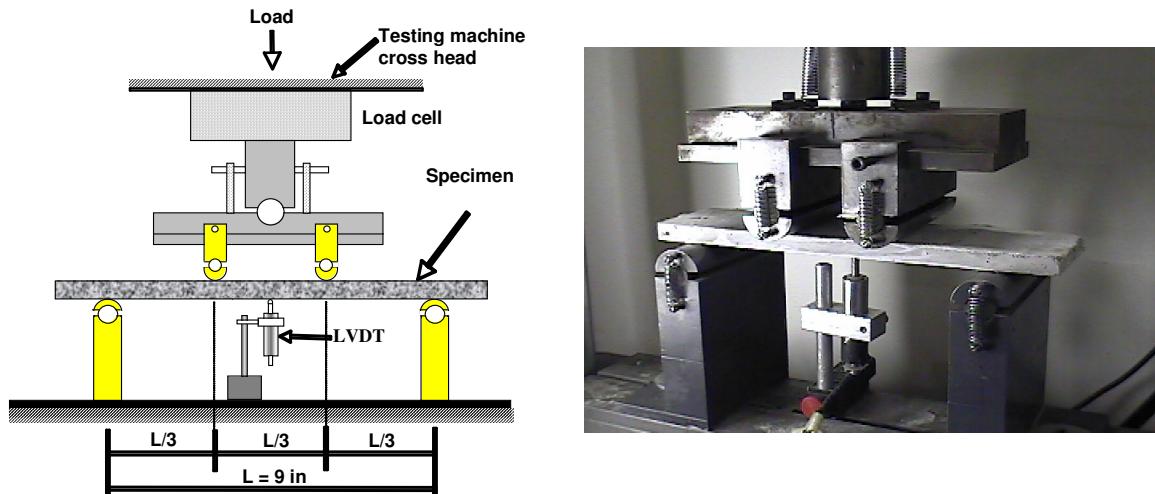
# Results of independent tests performed at the GG Brown Laboratory, University of Michigan College of Engineering

## Objective

To measure and compare the flexural strength of Competitor product, SaniCrete SL, SaniCrete STX with 1 lb of Helix, and SaniCrete STX with 2 lbs of Helix.

## Test Setup

A four point bending test was conducted using a hydraulic powered mechanical testing machine at the University of Michigan GG Brown Laboratory. Testing was completed on October 19, 2005.



## *Specimen configurations:*

The following series were tested:

- SaniCrete SL: Control (no fibers), SL Neat
- SaniCrete STX: SL Neat with 1 lb/pkg Helix (5-13 stainless)
- SaniCrete STX: SL Neat with 2 lb/pkg Helix (5-13 stainless)
- CP: Leading Competitor Product

All specimens had a span of 9 inches and a width of 4 inches; equal load was applied at two equally spaced points centered along the span. The two ends of the beam were simply supported. The depth of the specimens varied between 5/8" and 5/16". The variation of depth was taken into account in the calculation of bending stresses. Bending stress is computed using the following formula. Comparing bending stresses allows samples to be compared on an equal basis regardless of the thickness of the sample.

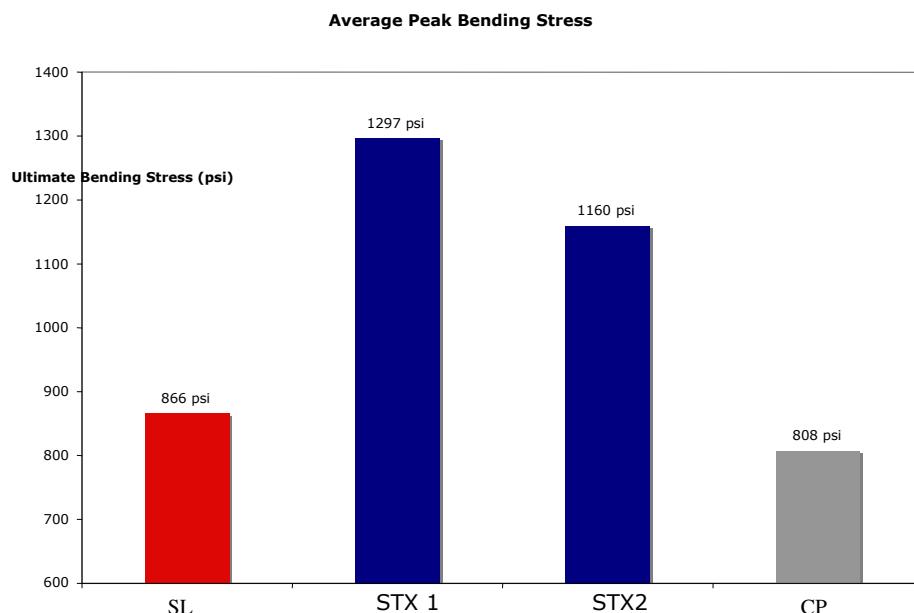
Bending Stress = Machine Load\* (Span/(width\*depth<sup>2</sup>)) where,  
 Machine load is the load applied by the machine  
 Span is the specimen span length, 9 inches  
 Width is the specimen width, 4 inches  
 Depth is the specimen depth, varies from specimen to specimen

Four specimens of each configuration were tested; the results are presented in the next section.

### **Results Detail**

The following is a statistical evaluation of the results. The best-case results are presented in the summary section.

The average results for peak bending strength are presented in graphical form. The peak bending strength is the maximum load the beam can hold. It is the primary indicator of the material's flexural or bending strength.



	Peak Bending Stress (psi)				
Series	1	2	3	4	Average
Competitor	632	847	903	849	<b>808</b>
SaniCrete SL SLNO	819	1033	782	830	<b>866</b>
SaniCrete STX 1 lb of Helix	121	1212	1457	1309	<b>1297</b>
SaniCrete STX 2 lbs of Helix	114	1260	1104	1117	<b>1160</b>

The table summarizes the results for all 4 specimens.

Statistically speaking, the improvement in peak bending strength over SLNO and CP of both STX1 and STX2 series were significant at the 95% confidence level.

### **Conclusion**

Adding 1 lb/pkg of Helix to the SLNO increases strength 50% on average. The testing proved both the 1 lb (XT1) and 2 lb (XT2) doses of Helix provided statistically significant increases in performance over SaniCrete SL and the competitor product. The test results indicate that a performance ceiling is reached at or near the 1 lb Helix dose.

### **Summary**

The test results show that the addition of Helix to SaniCrete SL significantly improves the flexural strength characteristics of the product named SaniCrete STX. A performance ceiling is reach at or near the addition of 1 lb of Helix per bag.