

# SLINGMAX® Technical Bulletin

## Cyclic-Tension and Break Test

TB# 9A  
Date August 17, 2006

The Crosby Group, Inc.  
Group Laboratory

August 17, 2006

Lab Log: L-06-110  
To: Mr. Paul Boeckman  
Subject: An evaluation of TPXC2500 x 4' Slingmax Twin Path Slings

### PROCEDURE

At the request of Slingmax Inc., cycle testing was performed on TPXC2500 x 4' Slingmax Twin Path slings using the bow of an S2130 13.5 Ton, 1 3/8" bolt type anchor shackle at each end of the loop. The bows of each shackle had been hand ground to ensure a smooth loading surface. Each sling was cycle tested to an upper load of 37,500 lbs. and a lower load of 550 lbs. for 50,000 cycles. The first sling was tested at a rate of 2 seconds per cycle. The second and third slings were tested at a rate of 4 seconds per cycle. Upon completion of the cycle test, sling no. 2 was ultimate load tested using the bow of an S2140 30 Ton, 1 1/2" alloy bolt type anchor shackle at each end of the loop. Occasional readings of the heat produced by the slings during cycling were taken and recorded by inserting a thermometer into the center crease of the sling as close to the loading surface as possible. All cycle tests were performed on the large MTS fatigue machine and the ultimate load test was performed on the 225 Ton horizontal pull test machine. Below are the results of all tests performed.

### RESULTS

<u>Test No.</u>	<u>No. of Cycles</u>	<u>Time sling had cycled/Time of day</u>	<u>Results</u>
Serial No. C060619 – cycled at 2 seconds per cycle			
1	5,459 11,340 23,302 53,310	6 hrs. 39 min. - 3:16 PM	Sling slightly warm to the touch Fixture at shackle bolt fractured Temperature – 100.4 degrees F No failure. Outer material and most inner strands have hardened at shackle contact areas. Some inner strands along length of the sling have bunched together and stiffened. Sling appears to have stretched 1 1/4" in length.
Serial No. C060617 – cycled at 4 seconds per cycle			
2	2,129 47,818 51,728	2 hrs. 22 min. - 5:18 PM 4 hrs. 21 min. - 2:00 PM	Temperature – 92.2 degrees F Fixture at shackle bolt fractured Temperature – 91.6 degrees F No failure. Outer material and most inner strands have hardened at shackle contact areas. Some inner strands along length of the sling have bunched together and stiffened.
Ultimate load = 105,100 lbs			Outer material torn at loading point on both ends. Inner strands fractured along length of sling.

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<u>Test No.</u>	<u>No. of Cycles</u>	<u>Time sling had cycled/Time of day</u>	<u>Results</u>
Serial No. C060616 – cycled at 4 seconds per cycle			
3	3,775	4 hrs. 12 min. - 2:15 PM	Temperature – 93.2 degrees F
	6,510	7 hrs. 14 min. - 5:15 PM	Temperature – 93.6 degrees F
	23,337	25 hrs. 56 min. - 12 PM	Temperature – 90.6 degrees F
	28,180	31 hrs. 19 min. - 5 PM	Temperature – 93.4 degrees F
	50,000		No failure. Outer material and most inner strands have hardened at shackle contact areas. Some inner strands along length of the sling have bunched together and stiffened. Sling appears to have stretched 2” in length.

Leslie McAulay  
Testing Engineer

ENCLOSURE A



Close-up of tag on slings being tested



Photograph of the slings once testing had been completed



Photograph of the inside end of a sling after cycle testing had been completed



Sling no. 2 after ultimate load testing



Close up of each end of sling no. 2 after ultimate load testing