

Which Lubricant is Best?

While we're on the subject of rubber, here's a study by Carl Bakay, published in the May/June 2000 issue of the South Louisiana Indoor Modeling Journal

This study was prompted by the article, *Which Lube?* In the August/september issue of **Free Flight**. I know that STP's Son of A Gun is a favorite of Pensacola fliers here in the South, and is used by many others. My two sources of breaking point information consist of the article of Michael A Morrow titled "Tan-II Rubber Breaking Point Curve," where he used Son of A Gun, and "Breaking Turns and Torque for Tan II Rubber," from Scott Cannon's www.modelflight.com web address. The first source used actual data, while the second used calculated values.

PROCEDURE

For the results listed below, I made up motors from approximately 18-inch loops of 1/8" F.A.I Tan-II of May, 1998. I then labeled Ziplock sandwich bags with a felt marker, one for each lube tested. Using Mr. Morrow's rubber break-in technique, each loop was lubed, stretched to three times its length for 5 minutes, with the lube further worked into the motor in its stretched state. After allowing to rest for 15+ minutes, each loop was stretched to 4.5 times its length for 5 minutes. Each motor was allowed to rest overnight in its own Ziploc bag while soaking in extra lube.

The motors were used as either one loop of two strands, or two loops of four strands. They were blotted with a paper towel until slightly damp, measured and wound with a 5~1 Peck Polymers winder to their breaking point.

MATERIALS

Seven cases were tested:

1. No lube
2. Curel Moisturizing Lotion - water, glycerin, petrolatum, parabens
3. Peck Polymers Roger Taylor's Contest Rubber Lube - grain alcohol, soft soap, glycerin, Oil of Lavender
4. Son Of A Gun by STP - a silicone/water emulsion
5. Soft Soap liquid hand soap-Tricloran , water
6. 2001 by Turtle Wax
7. Glycerin - U.S.P. Pure

RESULTS (in turns per inch until breaking)

Lube Used	Two Strands. Four Strands	
	TPI	TPI
None	93.1	62.9
Glycerin	94.5	59.2
Son Of A Gun M Morrow	100	

Author	101.5	
Curel Lotion	103.1	72.6
Peck Polymers	104.3	73.0
Sherman Equation	106	75
2001 Turtle Wax	107.2	72.3
Soft Soap	109.0	72.0

There was no really large spread in the turns-per-inch results from my study. Glycerin alone was messy and a poor performer. Sherman's 1994 equation predictions from Scott Cannon's site were good guidelines for average lubed rubber. A simple hand lotion like Curel Moisturizing Lotion was a good lubricator, and Soft Soap beat them all by a slim margin. Two stranded results showed a larger spread in the data, while four stranded motors broke at 72 to 74 TPI with all lubes tested.

Some tests were done with pure lanolin, but it was thick, messy, and gave poor results in its natural state. It obviously needs to be diluted somehow, so it was not included here.