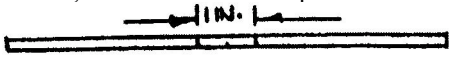
A Quick Rubber Test

By Hank Cole

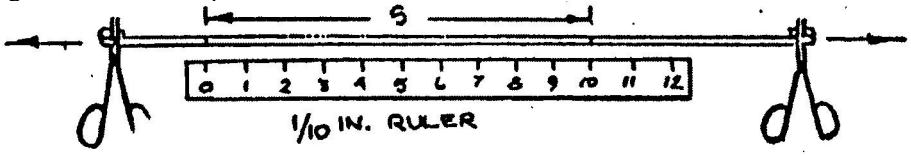
As published in the July/August 2003 issue of The Southern Louisiana Indoor Modeling Journal, Carl Bakay, Editor

Equipment:
1) two forceps
2) gram scale
3) 1/10 in. ruler
4) Hook from which to suspend rubber sample
5) pan or cup to load weights in

Procedure:
1) Cut a twelve inch sample of rubber to be tested
2) Mark off one inch, in the center with a pen

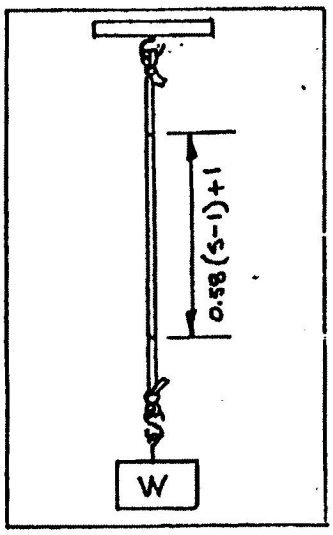


3) Grip the free ends with forceps. Roll up the ends on the forceps until almost at the one inch marks. Pull lengthwise of the sample two or three times to find the maximum stretch. This will take considerable force.



Note: For Tan two s = 10 to 11 inches

4) Tie loops in both ends of sample. Hang on hook with pan (or cup) for weights at lower end. Load weights until rubber stretch is 0.58 (s-1) +1



5) a. Weigh the sample (wt.)
b. Weigh the weight (W)

6) $\text{Energy} = \frac{W\,(s-1)}{wt.}$ s = the stretc length of the sample

Note: E is expressed in ft.lbs / lb.

Note: W & wt. must be in same units; grms. or oz.

Typical numbers:
wt. = 1.04 gr.
s = 10
W = 537 gr.

$E = \frac{(537)\,(10-1)}{1.04} = 4647$ ft. lb./lb.

Additional Notes:
1) Be sure to include weight of container in W.
2) Samples will no usually yield Energy ratings as high as the example. There are often variables within the rubber skein.
3) 4000 — 4100 is the average Energy range
4) The sample weight is critical for this measurement. Use an accurate gram scale (e.g. indoor scale, etc.)

(Editor's Note by Grabski: It would appear that for those of us average guys who use gram scales which are accurate only to 1/10 gram, that you might obtain a more accurate sample by accurately weighing an 11 gram motor, then cutting off 12 inches, leaving enough for a P-30 equivalent motor. The weight of the sample would then be (12 ÷ motor length) X 11.)