

## ***Bamboo Heat Treating Test:***

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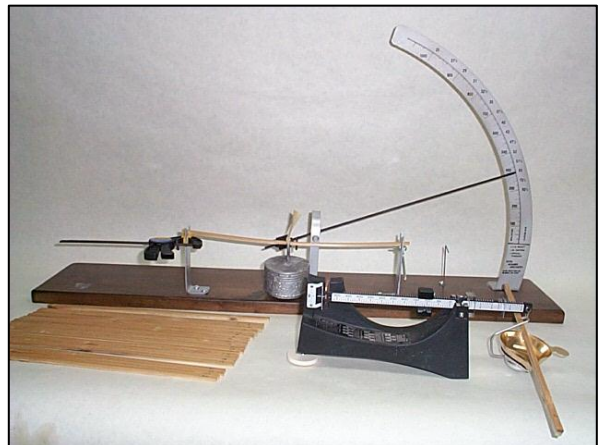
The purpose of this test was to measure the weight and stiffness of 24 individual strips of bamboo, each approximately 13 inches in length, before and after heat-treating. Each strip was weighed using a gunpowder scale, which gave a precise weight reading in grains. After weighing was completed, each strip was supported on 12" centres, and a 3-pound lead weight was gently suspended in the centre of the bamboo strip. The incurred deflection was measured in thousandths of an inch using an arrow spine tester normally used in archery. The readings were taken as soon as the needle stopped moving. All strips were tested twice with the enamel side up, and twice with the enamel side down; the average of all four readings was used.

The strips were then baked at 350° F. for 15 minutes.

Over the next several days, the weight and stiffness tests were repeated.

The tests showed that:

- heating reduces weight, presumably by eliminating moisture
- heating does NOT necessarily stiffen the bamboo
- in most cases, the bamboo was "softened" by the heating
- on average, heat-treating the test strips made them slightly less resistant to bending (average deflection was 101.6% after heating)



So what is the point of heat-treating bamboo? It removes the moisture in the cell walls and binds the fibers together, making the finished rod more resistant to taking a set.

See table below...

Strip #	Before HeatTreating		After HeatTreating		%Change	
	Weight:	Avg: Deflect:*	Weight:	Avg. Deflect:*	Weight:	Deflection:
1	124.5	0.221	118.2	0.238	94.9%	107.5%
2	119.2	0.228	113.4	0.237	95.1%	104.0%
3	132.3	0.201	125.9	0.199	95.2%	99.0%
4	140.5	0.189	133.5	0.191	95.0%	101.3%
5	142.6	0.181	135.5	0.189	95.0%	104.4%
6	165.0	0.162	157.0	0.166	95.2%	102.2%
7	102.4	0.347	96.9	0.346	94.6%	99.9%
8	117.8	0.283	111.7	0.276	94.8%	97.6%
9	116.1	0.305	109.2	0.299	94.1%	98.0%
10	113.5	0.293	107.2	0.305	94.4%	104.3%
11	114.0	0.277	107.5	0.292	94.3%	105.5%
12	93.1	0.400	87.5	0.414	94.0%	103.6%
13	111.6	0.312	104.9	0.326	94.0%	104.2%
14	109.7	0.319	102.7	0.330	93.6%	103.5%
15	112.2	0.317	105.4	0.319	93.9%	100.6%
16	110.2	0.337	104.2	0.329	94.6%	97.7%
17	106.1	0.376	100.5	0.373	94.7%	99.2%
18	102.2	0.377	95.8	0.385	93.7%	102.2%
19	133.7	0.265	126.4	0.258	94.5%	97.6%
20	102.5	0.415	97.0	0.404	94.6%	97.4%
21	127.1	0.246	120.4	0.243	94.7%	98.8%
22	132.1	0.199	124.3	0.209	94.1%	105.2%
23	115.0	0.281	108.2	0.291	94.1%	103.6%
24	109.5	0.312	104.1	0.316	95.1%	101.4%
AVG	118.9	0.285	112.4	0.289	94.5%	101.6%

\*NOTE: Avg. Deflect. is an average of four readings, two with the enamel side up, two with the enamel down.