



Quality index of tennis strings

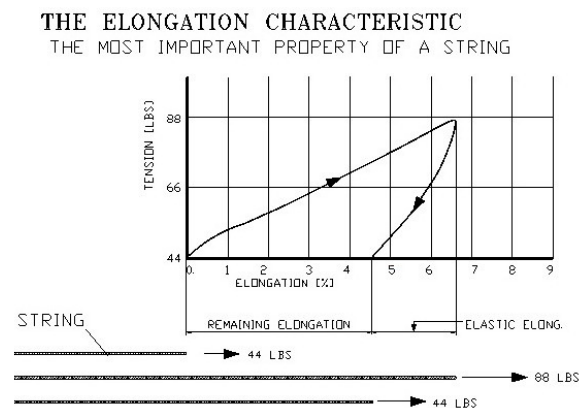
Introduction

The main quality of a tennis string depends on the elongation characteristic. Main values of the elongation are the remaining and elastic elongation.

The remaining elongation remains in the string after stretching and the elastic elongation disappears completely when tension is lowered again.

In the racquet the remaining elongation causes loss of tension and the elastic elongation maintains the tension in the string. The total elongation is the remaining plus the elastic elongation.

This graph shows the elastic and remaining elongation of certain string.



Test results.

Strings have to be classified in 4 classes for the Stringway Tension Advisor S1 – S4 based on the total elongation. This table shows the results of the elongation tests of a number of strings.

	ELONGATION				String quality index				Classification
	Elastic		Remaining		Total	el/tot			
	16-24	16-30	16-24	16-30	16-24	16-30	16-24	24-30	
	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	
VS gut	1,61	2,59	1,41	1,86	2,41	4,44	53%	48%	S1
Tt gold	0,59	0,83	1,36	2,56	1,73	3,40	30%	14%	S1
L-tec 7S	0,73	0,96	1,27	2,36	1,73	3,33	37%	14%	S1
Heptadox	0,74	1,02	0,97	2,00	1,43	3,02	43%	18%	S1
Paradox	0,70	0,88	0,95	1,94	1,38	2,82	43%	12%	S2
RPM Blast	0,63	0,93	1,25	1,81	1,64	2,75	34%	27%	S2
L-tec 4S^2	0,64	1,01	1,02	1,59	1,42	2,59	39%	31%	S2
L-tec twisted	0,73	0,96	0,77	1,63	1,22	2,59	49%	17%	S2
L-tec syngut	1,25	1,78	0,45	0,69	1,23	2,47	73%	43%	S3
Enduro Pro	0,65	0,96	0,64	1,14	1,04	2,10	50%	30%	S3
Enduro Control	0,62	0,88	0,63	0,88	1,01	1,76	50%	35%	S4
L-tec 4S	0,60	0,87	0,54	0,67	0,91	1,54	53%	43%	S4

Quality index.

The more elastic and less remaining elongation the better the string keeps tension in the racquet.

The quality index of the string shows the amount of elastic elongation in the total elongation.

So if 55 % is elastic and 45 % is remaining the index is 55.

The quality index of strings.

The difference in index is huge. This table shows the strings in order of quality between 16-24 and 24-30 kg.

		String quality index	
		el/tot	el/tot
		16-24	24-30
		[%]	[%]
L-tec syngut		73	43
VS gut		53	48
L-tec 4S		53	43
Enduro Pro		50	30
Enduro Control		50	35
L-tec twisted		49	17
Heptadox		43	18
Paradox		43	12
L-tec 4S^2		39	31
L-tec 7S		37	14
RPM Blast		34	27
Tt gold		30	14

How does it work in the racquet?

A racquet is strung at a certain tension and the stringer has waited with every string until all the elongation has occurred. The tension unit did not overshoot the adjusted tension so all the remaining elongation above the tension is still in the racquet.

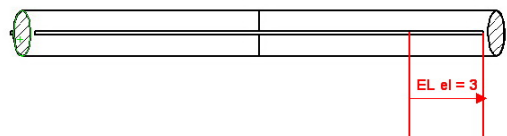
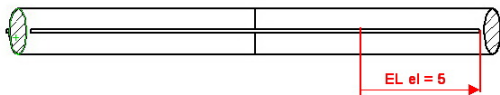
Every time that the string bed hits the ball a little remaining elongation occurs so the string becomes a little longer and loses tension.

Compare a bad and a good string.

We do as if the racquet has one string that represents the full string bed.

We compare a good and a bad string with an index of 60 and 30.

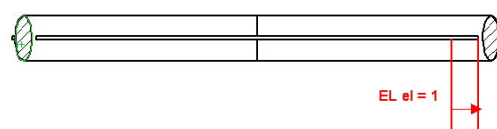
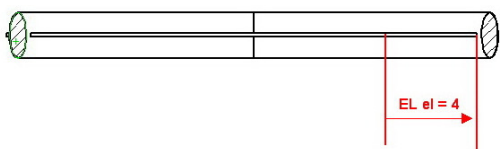
The good string has 5 cm and the bad string 3 cm elastic elongation after stringing.



After some play both by the same player the strings have lost tension.

Because the index of the good string is twice that of the bad string the remaining elongation in the bad string is twice that of the good string.

Lets assume that the bad string loses 2 cm so the good string loses 1 cm remaining elongation.



The remaining elastic elongation is 4 cm (5 – 1) and in the bad string 1 cm (3 - 2).

The remaining tension in the string corresponds to the tension that is needed to stretch the good string 4 cm and the bad string 1 cm .

Actual figures in the racquet.

The figures above are only to explain the system and to show how important the relation between remaining and elastic elongation is.

In the racquet the elongation is only percentages of the length of the racquet but the effect is the same.
