

Spring Test

We performed the load test on a variety of springs to choose which one could create the most potential and kinetic energy with the least amount of force. Since we did not know how to calculate or test other things such as ultimate tensile strength and the necking point, we decided that a partial stress strain graph would suffice. This partial stress strain graph helped our team decide which spring to use. We calculated stress, strain, and Young's Modulus and we graphed the Young's Modulus of three springs. The short dotted red line which can be seen near (0,0) is the first spring that we tested. A small amount of stress on the spring caused a moderate amount of strain, it also had a very low yield strength, so we immediately decided that we should not use this spring. The black filled line is the second spring that we tested. It is a very strong spring as it exhibited little strain for the amount of stress which was put on it, it also had a high yield strength. The dotted blue line is the last spring we tested, it exhibited even less strain for the amount of stress which was put on it, it also had an even higher yield strength than the last one. Our data concluded that spring 3, the blue dotted line, would be the best. However, thinking of our user we went with spring 2, the solid black line, because it would not require as much strength for the user to pull and had a high enough yield strength for the purpose of our bracelet.

	Spring #1	Spring #2	Spring #2
Force (g)	108 g	1115 g	2112 g
Diameter of spring	0.99 cm	0.82 cm	0.98 cm
Original length of spring	2.03 cm	4.21 cm	2.05 cm
Compressed length of spring	0.32 cm	0.71 cm	0.81 cm
Stress	140.302 g/cm ²	2111.336 g/cm ²	2799.960 g/cm ²
Strain	0.842	0.831	0.605
Young's Modulus	166.629 g/cm ²	2540.717 g/cm ²	4628.033 g/cm ²

