

A Comparative Analysis of Alternative Heating Methods of an Artificial Nylon Muscle

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The initial intention of this project was to compare how differing heating elements affected the artificial nylon muscle. One muscle fiber used a silver paint coating and the other was heated through a thread braid of cotton, polyester, and steel. At the beginning of testing the both silver painted muscles uncoiled immediately and was then deemed untestable for its inability to fully pass an electric current. Then the textile heating element muscle fibers also uncoiled with the buildup of heat. A muscle of 9 coils was then made with the textile woven braid weaving them all together. By running an electric current through, the muscle's work, power, modulus of elasticity, thermal conformity, and efficiency were then calculated.