

Properties of Materials: Tensile Strength

Apparatus:

Device for testing force applied to a strand of material includes:

- Side crank which changes separation by 0.05 inches per revolution.
- Top and bottom spools for winding the strand of material.
- Top and bottom clamps for holding material securely.
- Digital force gauge for taking measurements of the force applied on the material.
 - Turn on the force gauge by pressing the orange power button in the middle.
 - Turn off the force gauge by holding the orange power button for 1 second.
 - Zero the gauge by pressing the button labeled "Zero."
 - Measurement units may be changed in the device menu between lbF, kgF & N.



Procedures:

- Turn the crank clockwise until the top and bottom holders almost touch (Be careful to watch the knobs on the clamps as they will touch first).
- Turn on the force gauge.
- Clamp one end of a [21.5 inch] long strand of the chosen test material securely in the top clamp and wind it around the top spool three times. Then wind it three times around the bottom spool, ensuring that the material has a small amount of slack between the two spools, before clamping the other end securely.
- Reset the gauge to zero.
- Measure the separation between the top and bottom spools and record it.
- Turn the crank counterclockwise one revolution at a time, recording the force reading between each turn.
- Measure the separation between the two spools at the end of the test.