

## How to Make a Tape Strength Testing Apparatus

Step 1 – Preparing the Paper Bags (materials needed: tape measure or ruler, pen or pencil, scissors, paper bags):

1. With a tape measure or ruler, measure 6 inches from the opening of the closed paper bag. Make several marks on the bag at this distance, using a pen or pencil.
2. Cut off the top half of the bag with scissors, following the marks from Step 1 as your guide.
3. Write the name/type of tape to be tested on the paper bag (e.g. "masking" or "duct").
4. Repeat steps 1 – 3 for each type of tape you wish to test during this experiment.

Step 2 – Attaching the Tape Sample to the Paper Bag (materials needed: tape measure or ruler, prepared paper bags from Step 1, tape samples, testing surface with a level edge (e.g.: the end of a table)):

1. Place a ruler or tape measure on the testing surface (table), perpendicular to the edge. Center the "2 inch" mark on the edge of the table (this should leave you with the first 2 inches of the measuring device hanging off the edge).
2. Place your tape sample on the surface at the 4 inch mark of the measuring device. Firmly press the tape onto the testing surface, until it is secured up to the edge. Continue to extend the tape past the edge of the testing surface, and past the "0 inch" mark of the measuring device.
3. Cut off the tape at the "0 inch" mark. Note: there should be 2 inches of tape adhered to the surface and 2 inches of tape remaining over the edge of the surface.
4. Open the paper bag with this tape sample's name written on it, and place it upright against the edge of the testing surface. Firmly press the remaining 2 inches of your tape sample onto the bag, securing the bag to the testing surface, and allowing the bag to hang upright and level with the edge.
5. Repeat steps 1 – 4 for each tape sample, placing space between each bag so they are not touching.

Step 3 – Testing the Tape (materials needed: marbles, boxes)

1. Place a box under each suspended bag to assist in catching the bag of marbles when it detaches.
2. Drop one marble at a time into the open bag. Note: drop each marble from the edge of the table to ensure the same dropping distance and force.
3. When the tape sample and bag detaches from the testing surface, count the number of marbles dropped into the bag and record that number in the data chart.
4. Repeat steps 1 – 3 for each tape sample.