MATERIAL TESTING

Material testing is just another type of force measurement. The only difference is that the sample’s dimension is used to determine results. For example, a load result is called stress in material testing. Stress is the load result divided by the sample’s cross-sectional area. This is why stress has the unit pounds per square inch using imperial measurement. Using SI units, the common unit for stress is Newton per mm squared (N/mm2). N/mm2 is a mega-pascal (MPa). Stress = Force/Area.
Strain is distance from force measurement. Strain is a unitless value, but is often shown as a percentage. Strain is also called % Elongation. Again, like stress, strain uses the sample’s length value. Strain is the change in length from its original length. If the sample had an original length of 1 inch (25mm) and then was pulled to 2 inches (50mm), the strain is 100%. Strain equals Ultimate Gauge Length minus the Original Gauge Length divided by the Original Gauge Length.
Strain = (UGL-OGL)/OGL

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