

Materials and engineering report tension testing

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From these measurements the following properties can also be determined: young modulus, poisson ratio, yield strength, and strain hardening characteristics. 3. The tension tester A machine which applies a tensile force (a force applied in opposite directions) to the specimen, and then measures that force and also the elongation: This machine usually uses a hydraulic cylinder to create the force. The applied force is determined by system pressure, which can be accurately measured.

Work instruction sheet; Material testing Testing MODEL, ' -rest-0001 procedures; Documentation code; -TEST--- Date; NOVO. 29, 2012 Materials: 1 . Specimen made up of aluminum alloy having a round cross section and threaded shoulders which design for serrated grips. 2. Steel marker . 3. Testing machine. (hydraulics) 1 -Prepare the specimen required as shown. 2. Mark the sample specimen to establish its original formation. 3. The specimen to the grip holder. Then the sensor grip at the center of the specimen to ensure that there will be no fault action on the test. . Start the machine, perform the test, Observed. 5. Look at the specimen where in as you can see it starts changing its diameter. 6. Wait until it breaks. 7. Remove the Specimen to the machine. Tension Tester 4. Test result . Topic:

Compression Test A compression test is a method for determining the behavior of materials under a load. Compression tests are conducted by loading the test specimen between two plates, and then applying a force to the specimen by moving the cross heads together.

During the test, the specimen is compressed, and deformation versus the applied load is recorded. The compression test is used to determine elastic limit, proportional limit, yield point, yield strength, and (for some materials)

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strength. The stress that results from the shortening in one dimension of an elastic body due to oppositely directed forces tending to crush it. 5. The compression tester 6. Vocabulary 1 . Elastic Limit - Elastic limit is the maximum stress that a material can sustain without permanent deformation after removal of the stress.

Elongation - Elongation is the amount of permanent extension of a specimen that has been fractured in a tensile test. 2 Modulus of Elasticity - The modulus of elasticity is the ratio of stress (below the proportional limit) to strain, E , the slope of the stress-strain curve. It is considered the measure of rigidity or stiffness of a metal. . Proportional Limit - The proportional limit is the greatest amount of stress a material is capable of reaching without deviating from the linear relation of the stress-strain curve, L . . Without developing plastic deformation. 4. Reduction in Area- The reduction in area is the difference between the original cross-sectional area of a tensile specimen and the smallest area at the after fracture following the test. 5. Strain - Strain is the amount of change in the size or shape of a material due to force. 6. Yield Point- The yield point is the stress in a material (usually less than the maximum attainable stress) at which an increase in strain occurs without an increase in stress.

Only certain metals have a yield point. 7. Yield Strength - The yield strength is the stress at which a material exhibits a specified deviation from a linear stress-strain relationship. An offset of 0. 2% is often used for metals. 8. Ultimate Tensile Strength - Ultimate tensile strength, or US, is the maximum tensile stress a material can sustain without fracture. It is calculated by

dividing the maximum load applied during the tensile test by the original cross sectional area of the sample.