

Product Name :

Deformation of Bars under Bending or Torsion

Product Code :

ALABS-A169-023

**Description :****Deformation of Bars under Bending or Torsion**

Bending and torsion are typical loads to which components are subjected. The resultant stresses and deformations can lead to failure of the component. A number of different factors play a role in this, including the material, the cross-section of the bar, the clamping length and the method of bearing support. This investigates the influence of these factors on the deformation of a bar under bending load or torque. A set of test bars has been assembled so as to permit direct comparison of measurement results. The bar under investigation is fixed to two movable support blocks and loaded down by a weight. A dial gauge records the resulting deformation. The support blocks include clamping chucks to hold the torsion bars and bearings for the bars in the bend test. The bearings offer a range of clamping options, enabling statically determinate or indeterminate bearing supports to be investigated. The torque is applied by a device mounted on a support block. The point of load application to generate the bending moment is adjustable. The various elements of the experiment are clearly laid-out and housed securely in a storage system. The complete test setup is arranged on the frame. The well-structured instructional material sets out the fundamentals and provides a step-by-step guide through the experiments.

Specification:

1. Elastic deformation of bars under bending or torsion
2. Bending tests with statically determinate and indeterminate systems
3. Torsion tests with a statically determinate system
4. Supports in the bending test may be clamped or free
5. 2 adjustable blocks with clamping chuck for torsion tests and supports for bending tests
6. Set of weights to generate the bending or torque
7. Dial gauge with bracket
8. Storage system to house the components

Technical Data:*17 bars for bending tests*

- material: aluminium, steel, brass, copper
- height with LxW 510x20mm: $h=3\ldots10\text{mm}$
- width with LxH 510x5mm: $w=10\ldots30\text{mm}$
- length with WxH 20x4mm: $l=210\ldots510\text{mm}$
- LxWxH: 20x4x510mm (aluminium, steel, brass, copper)
- LxWxH: 10x10x510mm (aluminium)

22 torsion bars

- material: aluminium, steel, brass, copper
- length with $d=10\text{mm}$: 50...640mm (aluminium)
- dxL: 10x50mm/10x340mm (aluminium, steel, copper, brass)
- diameter with $L=50/340\text{mm}$: $d=5\ldots12\text{mm}$ (steel)

Dial gauge: 0...10mm, graduations: 0,01mm

Tape measure, graduations: 0,01m

Weights

- 1x 1N (hanger)
- 1x 1N, 1x 4N, 1X 5N, 1x 9N



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