

PHYWE

**PHYSICS
HANDBOOK MATERIAL TESTING**

Tensile Test/Compression Test



17577.02

Machines for testing materials for destruction under static loading have an outstanding part to play within the extensive family of materials testing methods. These methods include tensile, compression, bending and shear tests, as well as hardness tests.

PHYWE has developed their Material Testing Unit system to enable such tests to be carried out a part of technical training courses and advanced instruction.

The material testing unit is in principle a hydraulic press which provides, through a ram 100 mm in diameter, the tensile or compressive force needed for the experiment. The maximum possible load applied by the testing machine is 30 kN. The maximum stroke of the ram is 100 mm.

The maximum force of 30 kN can be applied within five seconds or as slowly as desired and can then be held constant, so that the rates of application of stress laid down in the standard, 10–30 N/mm² · s, can be maintained.

This HANDBOOK can be purchased separately. It contains the experiments listed below. Please ask for a complete equipment list. Ref No 21602

Handbook • Material testing: Tensile test/Compression test • No. 17577.02 • 17 described Experiments

1 Material testing

1.1 Destructive material tests

- 1.1.1 Tensile test
- 1.1.2 Hardness test
- 1.1.3 Impact test
- 1.1.4 Fatigue test

1.2 Non-destructive testing

- 1.2.1 Penetrating fluids
- 1.2.2 Magnetic powder
- 1.2.3 Electro-inductive tests
- 1.2.4 Ultra sound tests

1.2.5 Radiography

2 Tensile testing

- 2.1 Tensile testing in the elastic range
- 2.2 Tensile testing in the plastic range
- 2.3 Derivation of the modulus of elasticity E
- 2.4 Tensile tests on different materials
- 2.5 Derivation of important tensions
- 2.6 Contraction and elongation of tested materials

3 Hardness testing

3.1 Brinell hardness test



Tensile tests on different materials (2.4)