

## Common properties of bodies

*Density*

Determining the density of a solid body - Set of 2 measurement blocks

**Objects of the experiments**

1. Determining the densities of different solid bodies
2. Determining the substances the bodies are made of

**Setup****Apparatus**

1 Gauge blocks, set of 2.....	590 33
1 Single-pan suspension balance 610 Tara .....	315 23
1 Vernier callipers.....	311 52

**Carrying out the experiment**

1. Determining the density:

Rectangular parallelepiped:

- Use the vernier callipers to measure the length, width, and height of the rectangular parallelepiped.
- Calculate the volume of the body (see D 1.1.1.1).
- Put the body on the pan.
- Equilibrate the balance by shifting the sliding weights.
- Read the positions of the sliding weights and determine the mass of the body from them.
- Calculate the density of the body from the mass and the volume.

Cylinder:

- Use the vernier callipers to measure the height and diameter of the cylinder.
- Determine the radius of the cylinder from the diameter.
- Calculate the volume of the body (see D 1.1.1.1).
- Determine the mass in the same way as in the case of the rectangular parallelepiped.
- Calculate the density of the body.

2. Determining the substance

- Determine the substances the bodies are made of by comparing the calculated values with those from the table.

**Measuring example**

Body	Volume $V$ in $\text{cm}^3$	Mass $m$ in g	Density $\rho$ in $\text{g}/\text{cm}^3$	Substance
rect. par.	32.0	248	7.75	steel
cylinder	87.4	237	2.71	aluminium

**Evaluation**

1. For determining the density of solid bodies their mass and volume have to be determined. Then the density can be calculated according to the formula  $\rho = \frac{m}{V}$ .
2. By comparing the calculated density with given table values, the substance a body is made of can be determined.