

MEASURING DENSITY OF SOLID BODIES - SAME VOLUME (IMMERSION WEIGHTS)

MED 01.09b



Material:

Item-no.	Qty.	Description
DS090-1K	1	Claw base simple, L=200 mm
P7240-1C	1	Support rod, round, L=250 mm, D=10 mm
DS400-3K	1	Bosshead cross-pattern, Demo, green
DM725-ND	1	Newtonmeter
P3120-5B	1	S-shaped assembly platform
DM112-1A	1	Immersion weight Al, 100 cm ³
DM112-1F	1	Immersion weight Fe, 100 cm ³
DM112-5A	1	Immersion weight Al, 50 cm ³
DM112-5F	1	Immersion weight Fe, 50 cm ³
DG100-1L	1	Vernier calliper, metal

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Purpose

Determination of the density of different materials by weighing.

Concept of density: Masses of different sizes are more or less crowded together on the same volume.

Preparation

Insert the 25 cm rod into the claw base; afterwards fix the cross-patterned bosshead to the support rod. Place the Newtonmeter on the S-shaped assembly platform for a better visibility.

The weighing bar of the Newtonmeter should be mounted in the bosshead with the hook facing down.

Experiment

Set the measuring range on the Newtonmeter to „kg“(kilograms); afterwards turn it on. Hang one mass body after another on the hook and note the mass in the 2nd column of the chart below.

Determine the dimensions of the various bodies with the Vernier calliper and calculate the volume. The result of your calculation should be the same as in the 3rd column of the chart.

Now the density is calculated by dividing the mass through the volume and the results are noted in the last column of the chart.

	Mass (in kg)	Volume (in cm ³)	Density
Aluminum		100 cm ³	
Aluminum		50 cm ³	
Iron		100 cm ³	
Iron		50 cm ³	

Note

In this experiment the mass (in grams) is equal to the density in grams per cm³.

In the SI-system the unit is kilograms per m³.

For example: Aluminum 2,7 g/cm³ = 2700kg/m³