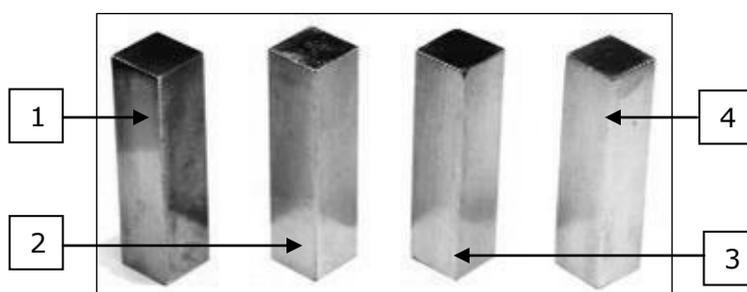


OPERATING INSTRUCTIONS

AND SUGGESTED ACTIVITIES

EQUAL VOLUME SQUARE METAL BLOCKS SPECIFIC GRAVITY SPECIMEN SET

SGVS04



DESCRIPTION

The Equal Volume Square Metal Blocks Specific Gravity Specimen Set SGVS04 consists of four square block samples of different metals. The samples all have the same nominal width, thickness and length, but different masses.

The parts of the set are shown in the picture above:

1. Copper specimen
2. Steel specimen
3. Brass specimen
4. Aluminum specimen

SPECIFICATIONS

Cross section of the blocks:	1.26 cm x 1.26 cm (0.5" x 0.5")
Length of the blocks:	5.00 cm (2.0")
Masses of the blocks:	Aluminum 21.67 g
	Brass 67.23 g
	Copper 70.73 g
	Steel 62.39 g

The standard values for the specific gravity of the four materials are:

Aluminum: 2.73, Brass: 8.47, Copper: 8.91, Steel: 7.86

ACTIVITIES

ACTIVITY 1 – Direct measurement of the specimen density

Equipment needed: Specimens
 A balance weighing to at least 0.1g
 A metric ruler with millimeter markings, or
 A vernier caliper (preferred)

Procedure:

- Set up the following table:

Specimen	Specimen dimensions (cm) width w, thickness t, and length L				Volume, V (cm ³)	Mass, m (g)	Density, D (g/cm ³)
		1	2	3			
Aluminum	w						
	t						
	L						
Brass	w						
	t						
	L						
Copper	w						
	t						
	L						
Steel	w						
	t						
	L						

- Use the metric ruler or the vernier caliper to make three separate measurements of the width, w, of each specimen. Record your data in the table.
- Calculate the average of your width measurements for each specimen and record it in the table. (*Why is the average value a better one to use?*)
- Use the metric ruler or the vernier caliper to make three separate measurements of the thickness, t, and length, L, of each specimen. Record your data in the table and calculate the averages in the same way as for the width.
- The volume V of a block w wide, t thick and L long is given by the formula

$$V = w \times t \times L$$
- Calculate the volume of each specimen using your average w, d and L values and enter the data into the table.
- Weigh each specimen using the balance and enter the mass, m, into the table.
- The density, D, of an object is given by the formula:

$$D = \frac{m}{V}$$
- Calculate the density of each of the specimens and enter it into the table.
- Compare your density results with the standard values for the specimens (*Your teacher will give you these values*)