

SQUEEZING PLASTICINE

Purpose

To show how oolites change shape when compressed.

Activity

1. Mark the sides and top of the plasticine cube with a light impression of circle by very gently pressing the spray can top into it. Measure the diameter.
2. Place the cube in the vice with the top of the plasticine about 2cm below the top of the wood attached to the vice.
3. Measure the distance between the pieces of wood.
4. Close vice by 2mm (that is about half a turn). Measure the distance between the jaws.
5. Measure the maximum and minimum diameters of the ellipse. This is easiest if you use the callipers.
6. Record your data under the following headings.

a	b	c	d	e
Vice opening	$\frac{\text{opening}}{\text{original opening}}$	max diameter	min diameter	$\frac{\text{min diam}}{\text{max diam}}$

7. Repeat instructions 3 and 4 until the plasticine is about half of its original thickness.
8. Plot the data as a graph of column b against column e.
9. Measure the maximum and minimum diameters of 10 oolites on the photo and calculate min/max and work out an average.
10. Use your graph to calculate how much, on average, the oolites have been compressed.

11. *Think carefully about the experiment and suggest why we can obtain data on the amount of compression from deformed oolites but not from deformed pebbles.*

Teacher's Section

Requirements:

Portable wood vice (Record 12A7 or similar)

Plasticine cube 6cm each side. Make sure the plasticine is soft.

Spray can top about 4cm diameter, at least 2cm smaller than the block of plasticine

Ruler and callipers

Sample or photograph of squashed oolites (Cloos E 1947 Geol Soc Am Bull v58 p843-918)

Results

Pebbles are rarely spherical. If we knew the original shape of the pebbles it would be possible to calculate the amount of compression. Oolites are originally spherical so it is possible to calculate the amount of compression from them.

Notes

A similar experiment can be done using sponge with circles drawn on. Squeezing the sponge represents the squashing of reduction spots in shale as it dewateres.

Time

30 minutes

Cost

Vice £20