

“Minerals that do things...”

Hands-on demonstrations of mineral properties

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How to Bend a Rock

Object: Students think of rocks as hard, inflexible objects but it is possible for them to actually bend a rock or a mineral. Some rocks and minerals are **elastic**.

Procedure description: Students take a piece of mica and try to bend it. Then, using their fingernails, they pry off a thin sheet. They'll find that they can bend the thin sheet. A notched drill core can be flexed by squeezing its ends together between a finger and the thumb.



Specimens to test: Mica – get as large of plates as possible. Notched drill core of a competent rock.

Equipment needed: How to make a fletched drill core: Find a piece of drill core between 10- and 20-inches in length, the longer, the better. Select drill core that was cut from a competent rock. Using a diamond saw, cut a thin slot down (the notch) the length of the drill core, stopping at least three or four inches from the end. Experiment with different rocks, esp. metamorphic rocks. It may help to use core in which the grain direction or layerings are parallel to the drill core's length. You can demonstrate flexibility in a rock by gentle squeezing the notched end of the core – the two halves will move together somewhat under the pressure from your fingers and thumb. Don't overstress the material (it is a good idea to prepare backups – eventually they will break).

Scientific discussion: Every material is flexible to a small extent, even solid rocks. By cutting a long or thin enough piece of a rock you can observe its flexibility without breaking it. Elastic rocks and minerals not only bend, but they spring back, too.

Additional possibilities: Flexible sandstone (also called itacolumite) has been reported in Georgia, North Carolina, India, and Brazil. A thin plate of flexible sandstone can be held between both hands and gently flexed. Flexible sandstone is flexible for two reasons: it has often has small oriented plates of flexible mica in it, and the grains of sand are interlocking but poorly cemented together. Some mineral dealers sell flexible sandstone.

Notes for demo tables: If you are doing demonstrations for large numbers of visitors (such as at a booth at a trade show), I've found that it is simplest to use large thin sheets of mica. Kids can pick them up, look though them, and bend them without damaging them. You should recognize that a notched drill core or a piece of flexible sandstone will have a limited life span on a demo table. Bring back-ups.

Special Note: Many fibrous minerals are flexible. Asbestos minerals such as chrysotile are flexible, but health hazard concerns preclude their use in most demonstrations.