

The Laboratory

How To Test Hardness

Step one

Collect a whole load of rock samples. Beaches, fields, parks, hills, even city streets are good places to collect samples. But don't even think about going to a quarry unless you're invited – they are very dangerous places. Find out why in Quarryville's online "Safety Zone" (www.tarmac.co.uk/quarryville/safety).

Step two

Once you've got the rocks, here are the tools you'll need for your own mini-lab:

- ◆ A collection of rocks
- ◆ Glass tumbler
- ◆ Bronze coin
- ◆ Penknife
- ◆ Iron nails
- ◆ Steel file

A big clue to a mineral's identity is its hardness – what will scratch it and what will not. A mineral can scratch any other mineral that's lower on the Mohs scale.

Which of your rocks can you scratch with your fingernail? These are very soft rocks (usually sedimentary rocks).

Which rocks can be scratched with the coin? These are also soft rocks.

Which can be scratched only with the nail or knife? These are hard rocks (usually igneous or metamorphic rocks).

Step three

Try scratching a mineral with one of the equivalent objects on this special Mohs scale.

Scratch each mineral sample you've collected with each tester to find out which will scratch and which will not. Start by using your fingernail: then work through the harder objects.

If your fingernail does not leave a scratch, try a bronze coin. If a bronze coin leaves no scratch, you know the mineral must be 4 or harder on the hardness scale.

Be very careful when trying to scratch with a penknife. If it's the softest object to leave a scratch, the mineral has a hardness of 6.

Now try the tests on other minerals.

Moh's scale of hardness		
Talc	1	Talcum powder
Gypsum	2	Fingernail
Calcite	3	Bronze coin
Fluorite	4	Iron nail
Apatite	5	Glass
Feldspar	6	Penknife blade
Quartz	7	Steel file
Topaz	8	Sandpaper
Corundum	9	So hard there's no equivalent
Diamond	10	So hard there's no equivalent