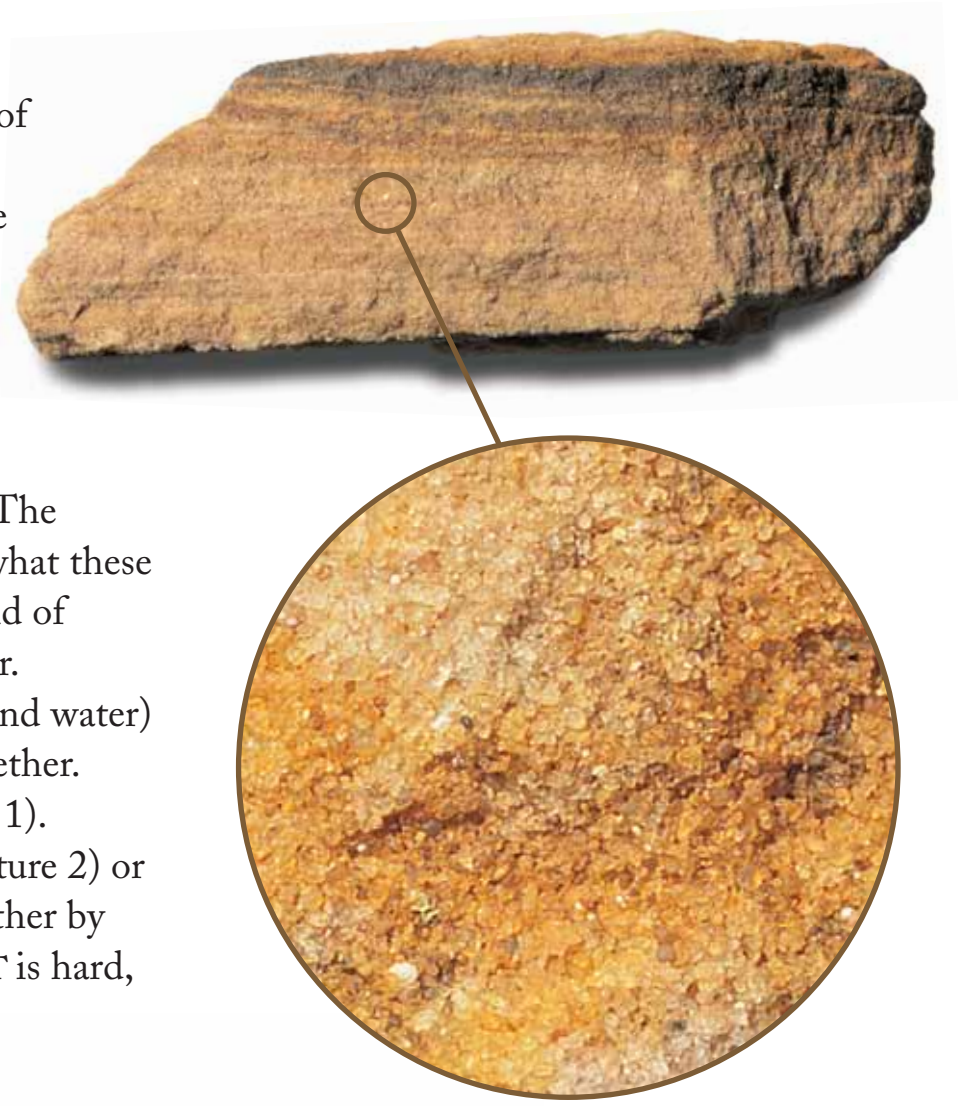
3 Hard and soft rocks

Some rocks are much harder than others. This affects how they are used.

There are many different kinds of rock. Some rocks come from volcanoes. Other rocks are made in different ways. They all vary in hardness. Only the really hard ones are useful in building.



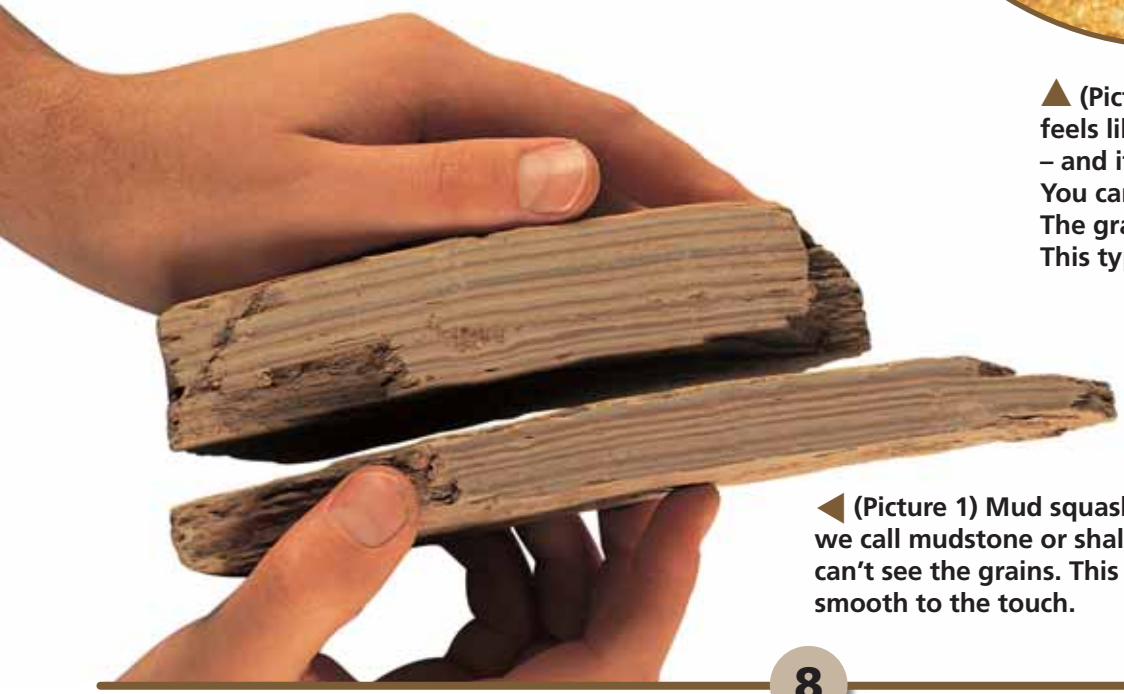
Hard or soft?

A rock is made of small grains. The hardness of a rock depends on what these grains are made of and what kind of natural glue holds them together.

Rocks made of **MUD** (**CLAY** and water) have no 'glue' holding them together. They are nearly all soft (Picture 1).

Rocks made from **SAND** (Picture 2) or shells (Picture 3) are glued together by natural cements. If the **CEMENT** is hard,

▲ **(Picture 2) A rock made from sand feels like the sand you find on a beach – and it is often the same colour, too. You can see the sand grains easily. The grains feel rough to the touch. This type of rock is called SANDSTONE.**



◀ **(Picture 1) Mud squashes into a soft rock we call mudstone or shale. Mud is so fine we can't see the grains. This kind of rock feels smooth to the touch.**

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the rock is hard, but if the cement is soft, the rock is soft.

Rocks that have been baked when deep underground are always very hard (Picture 4). **MARBLE** is one of these rocks.

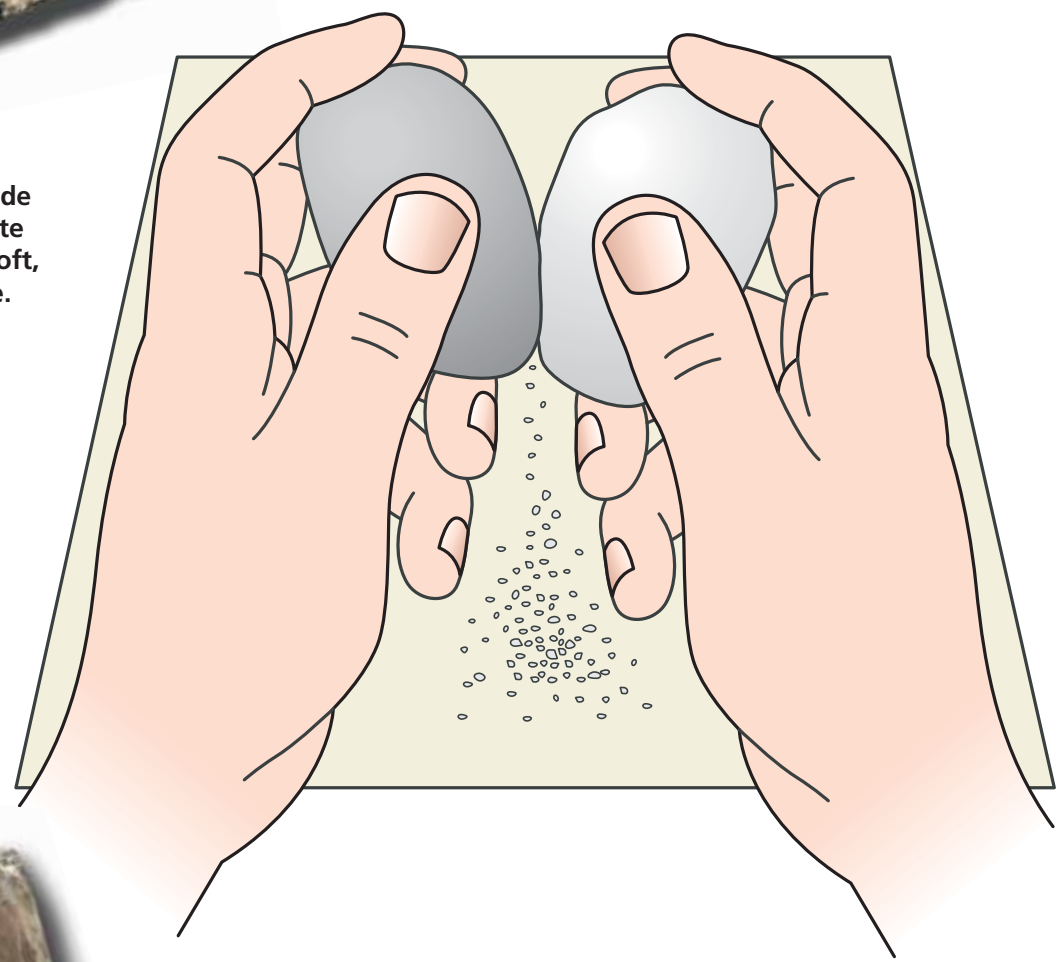
▲ **(Picture 3) LIMESTONE is made from sea shells. It can be white or grey in colour. CHALK is a soft, very white form of limestone.**

▼ **(Picture 4) Marble has been baked into a very hard rock while deep underground.**

Testing for rock hardness

It is not easy to tell which rocks are hard and which are soft just by looking at them. To find out whether one rock is harder than another we can rub rocks gently together and see which one rubs away (Picture 5). The one that rubs away is the softer rock.

▼ **(Picture 5) Testing for hardness by rubbing two samples together.**



Summary

- **Hard rocks are useful as building materials.**
- **Soft rocks are rarely used for building.**
- **Rock hardness can be tested by rubbing.**