

All about

dolomite

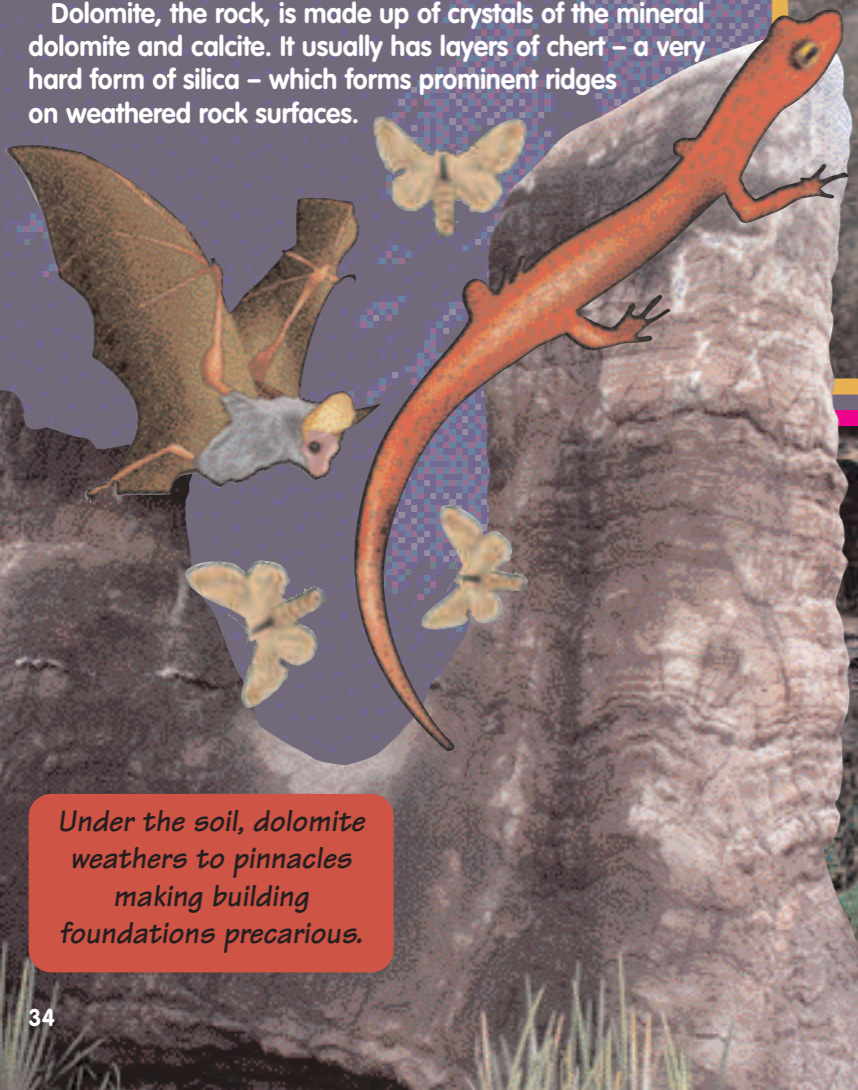
The name "dolomite" is used to describe both a rock and a mineral. The rock name "dolomite" is derived from a famous French mineralogist Déodat Gratet de Dolomieu who was the first to describe it.



Dolomite is a carbonate, which is a mineral containing carbon dioxide (CO₂) combined with a metal and more oxygen. The most common carbonate is calcite, which has a chemical formula of CaCO₃, which can be thought of as CaO and CO₂. Ca stands for the metal Calcium, which combines easily with oxygen to become CaO and is not often seen in its raw metallic form. And of course C stands for carbon and O is oxygen.

The mineral dolomite is (Mg,Ca) (CO₃)₂, or (Magnesium or Calcium) O and (CO₂)₂, or (Mg,Ca) O and (CO₂)₂ (it's made of carbon dioxide - CO₂ - which causes the greenhouse effect!). There is a lot of dolomite in South Africa, so there is also a lot of carbon dioxide "locked up" in it.

Dolomite, the rock, is made up of crystals of the mineral dolomite and calcite. It usually has layers of chert - a very hard form of silica - which forms prominent ridges on weathered rock surfaces.



Under the soil, dolomite weathers to pinnacles making building foundations precarious.



Stromatolites in dolomite at Lyttleton.



Stromatolites in Mpumalanga.

Where does dolomite come from?

In South Africa the dolomite was deposited in a warm shallow sea, 2 300 million years ago by stromatolites - mounds of blue-green algae or cyanobacteria, living in shallow water. These algae are long fibrous filaments and they live off carbon dioxide and give off oxygen, so they created the Earth's oxygen-rich atmosphere. Thin layers of very fine sand formed with the stromatolites. The dolomite covered most of the Mpumalanga, Gauteng and North West Provinces, as well as much of Limpopo Province.

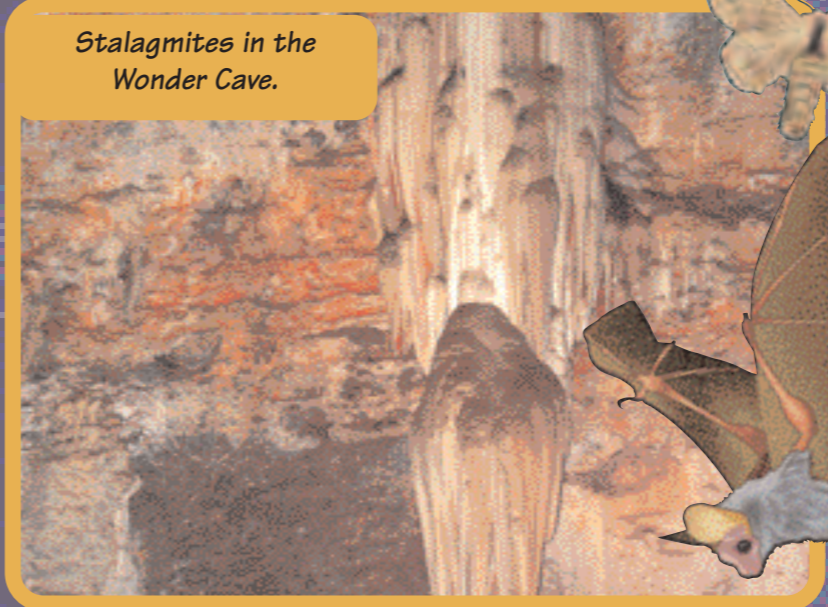
Dolomite and cave formation

Areas underlain by dolomite often have caves formed by erosion - water running through cracks over millions of years can create large caves, sometimes with beautiful formations - stalagmites and stalagmites (stalagmites hang from the roof and stalagmites grow from the floor). Sterkfontein and Wonder caves are examples of caves in dolomite. There are lots of caves in the Sterkfontein area, but most are closed to the public.

Stalagmites in the Wonder Cave.



Stalagmites in the Wonder Cave.



Dolomite and sinkholes

Dolomite can also be dissolved by acids - and of course polluted rivers and streams can be acid, so whenever there is dolomite near polluted running water the danger exists of new caves forming.

If these caves are near the surface they are called 'sinkholes' - the weight of the soil causes the surface to collapse, and houses and people can fall in and disappear.

Special precautions have to be taken to make dolomite safe for buildings.



A sinkhole in a Pretoria suburb.



Special methods have to be used to build on dolomite, and the Gautrain is going to run on viaducts - long bridges - over most of Centurion where the surface is underlain by dolomite. The light blue parts of the map (T2 and T2J) show areas underlain by dolomite.

Map of the Gautrain route in Lyttleton, Fountains and N1.

