Dolomite Encyclopedia Article

Dolomite

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Dolomite

The term dolomite is used both for the mineral dolomite (calcium magnesium carbonate [$CaMg(CO_3)_2$]) and for the **rock** dolomite, which consists mostly of the mineral dolomite. Dolomite rock is sometimes termed dolostone to distinguish it from the mineral dolomite, but the more confusing terminology is the more prevalent. Dolomite rock is formed from **limestone** (which is mostly calcite, i.e., calcium carbonate [$CaCO_3$]) by the replacement of about half of the limestone's calcium ions by magnesium ions. Because of its close relationship to limestone, dolomite is sometimes categorized as a type of limestone.

Limestone forms primarily in shallow **seas** and coastal waters where shelled marine organisms—crustaceans, mollusks, bivalves, and the like—proliferate. The shells of such creatures consist essentially of calcite. They accumulate on the sea floor in thick beds and are transformed into limestone over time. Some limestone is further transformed to dolomite by processes only partly understood. These various processes are lumped under the term dolomitization. The essential feature of all dolomitization processes is the importation of magnesium ions by **water**. These take up residence in the crystal structure of the limestone and convert it to dolomite.

Dolomites often occur in association with limestone, **gypsum**, and other rocks formed by shallow seas. Dolomite beds one or more meters thick are often sandwiched between similarly thick limestone beds. Dolomite and limestone are difficult to tell apart visually; a common field technique for distinguishing them is to drip hydrochloric acid (a hydrous solution of HCl) onto a hand sample. In response, limestone froths vigorously and dolomite weakly.

Metamorphosed limestone becomes calcite **marble**; metamorphosed dolomite becomes dolomitic marble. Dolomitic marble can be converted to calcite marble by dedolomitization, that is, the **leaching** out of magnesium.

Dolomites are used as magnesium ores, as a source of pharmaceutical magnesia (MgO), and as a flux—aid to the removal of impurities—in metal refining.

See Also

Fossils and Fossilization; Field Methods in Geology; Industrial Minerals