

## **Dolomitization in the Kodiang Limestone, Kedah**

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The Kodiang Limestone formation which outcrops in the Kodiang and Alor Star areas has been well studied and documented. Various geological aspects of the limestone formation have been reported in great detail including its stratigraphy, sequence stratigraphy, sedimentology, and paleontology. Diagenetic aspect of this rock, however, has not been specifically discussed.

Generally, the Kodiang limestone consists of alternations between thinly bedded fine-grained carbonate (e.g., mudstone-algal packstone) and thickly bedded units which are represented by bioclastic packstone-rudstone.

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The fine-grained intervals have been interpreted to represent depositions in deeper and restricted environments, whilst the coarser-grained interval represent depositions in shallow and agitated waters.

Close examinations at outcrops show that dolomite present at several places in the sequence. Their systematic occurrence can be correlated across the area.

Petrographic studies show that dolomite occurs in modes. Basically, two groups of dolomite can be recognized based on their mode of occurrences:

1. **Stratified dolomite.** This dolomite is represented by dolomicrites and microdolomites which are replacing micrites and grains in the algal laminated facies. The dolomite crystal are euhedral to subhedral with an overall sugary texture. Dolomitizations in the algal laminated limestone facies have produced black and brown laminae.
2. **Nonstratified dolomite.** The nonstratified dolomites are represented by:
  - a. Dolomite cement
  - b. Planar dolomite
  - c. Nonstratified dolomicrite.

In general, their crystals are bigger and well-formed as compared to the stratified one. These dolomites do not form layering in the limestone. Their occurrences have no systematic trend and randomly disseminated in the dolomitized intervals of the Koding Limestone. In some places they occur in stylolites, dissolution seams and fractures which cross-cut earlier formed fabrics.

The two groups of dolomites are attributed to two phases of dolomitizations. The stratified dolomites are interpreted to have been formed early in the limestone diagenetic history as evident by their mode of occurrence. The nonstratified type is, however, attributed to dolomitization during deep burial under the control of deeper subsurface physico-chemical conditions.

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