

# Indonesian Fossil Coral

## INTRODUCTION

It is important that people understand “fossil coral” is a natural stone formed from ancient corals. It should not be mistaken for protected and endangered coral reef from the modern oceans of today. Of the varieties of fossilized corals found throughout the geologic record, exquisitely detailed specimens from the mountains of Indonesia are most unique and beautiful.

Corals have been growing in the oceans around the world for almost 500 million years. The corals thrived in warm shallow marine waters and over time were buried in sediments as the land surface was juggled by crustal plate movements or the oceans rose and fell. Temperature and pressure from compaction during burial resulted in those deposits, in time, becoming rock and part of the present day geological record.

For many years, ancient coral deposits have been mined for their high quality calcium, potassium, magnesium and sodium content which is used in health supplements. Fossil coral has also been used in fertilizers. Fossil coral has even been used in filters to remove impurities such as chlorine and formaldehyde from water.

## INDONESIAN FOSSIL CORAL

New ocean crust is created by upwelling basaltic magma along the mid-ocean ridges. Ocean plates move away from mid-ocean spreading centers and subduct under the continental plates. Subducting ocean plate material re-melts as it reaches depths under high temperature and pressure and becomes molten magma which seeps back up to the surface and erupts thru volcanic vents. This occurrence is most evident along the Pacific Rim, what is commonly known as the ring of fire, an area depicted by high incidence of volcanic activity.

Indonesia is located on convergent plate boundaries. Subduction of the northeast moving Indian Ocean plate under the western islands of the Indonesian archipelago has resulted in a long history of volcanic activity.



Extensive eruptions of volcanic debris have repeatedly buried forests and nearby reefs offshore as well. During burial, the decay of the volcanic ash releases mobile silica and other elements which saturate formation waters and in some situations reacts with the carbonate of the buried coralline reefs or other organic matter such as wood from buried forests.

The volcanic islands of Indonesia are host to numerous deposits of fossil coral. The Barisan Mountain Range, along the western boundary of the Island of Sumatra, hosts a rare and ornate suite of fossils. Miocene age (approx 20 million year old) coralline reefs and near shore forests were preserved by burial in volcanic sediments rich in minerals including iron, manganese and silica. Thru a combination of processes the full pattern and character of the original coral life forms have been preserved in great detail.

## PROCESSES

“Permineralization” is the process of filling pore space in and around the remnant hard coral skeleton with minerals deposited from solutions trapped or migrating thru the sedimentary pile as it is compressed into rock.

“Replacement” is the process whereby the original coral skeleton is replaced molecule by molecule with a mineral or minerals from a solution.

This dual process preservation can occur with different accessory mineral concentrations and result in maintaining the contrast between the original soft tissues and the skeletal remains of the corals as different minerals impart different colors to the stone.

In Indonesia, entire coral heads are often completely preserved and appear just as they did 20 million years ago although their density is much changed by replacement and infill with silica, iron, manganese and other minerals. There are fern corals, brain corals, hex corals, honeycomb corals and many more.

