

WHAT ARE **BIVALVES** MADE FROM

Calcium carbonate (CaCO_3)

The primary mineral that makes up the shells of bivalves (such as clams, oysters, mussels, and scallops) and many other molluscs. It is a key structural component that provides strength and protection.

Why Calcium Carbonate?

- It is abundant in seawater, making it easily accessible.
- It provides a balance of hardness and flexibility.
- The layered structure helps resist fractures and predation.

If we can imagine a shell cross section, we can see **THREE layers**.

NOTE

The calcium carbonate exists in two main crystalline forms:

Aragonite: A more soluble and slightly less stable form, often found in the inner layers.

Calcite: A more stable and durable form, often found in the outer layers.

Periostracum: The outermost organic layer (made of a protein called conchiolin), which protects against erosion and predators.

Prismatic Layer: Made of tightly packed calcite or aragonite crystals, providing rigidity.

Nacre (Mother-of-Pearl): The innermost iridescent layer, made of aragonite platelets arranged in a brick-like structure, making the shell strong and resilient.

THREATS

Ocean acidification (caused by increased CO_2 levels) reduces carbonate ion availability, making it harder for bivalves to form their shells.

This can weaken shells and threaten bivalve populations, which are ecologically and economically important.