Limestone is a sedimentary rock made mostly of **calcium carbonate ($CaCO_3$)**. It often forms from the shells, skeletons, and remains of marine organisms. There are two main types of limestone: **clastic** and **non-clastic**. Clastic limestone is made from **clasts**, or fragments, of older rocks and shells. These pieces are broken down by weathering and transported by water. Eventually, the fragments are **deposited** in layers usually at the bottom of oceans. Over time, the pressure from more layers on top causes the sediments to become compacted. Minerals dissolved in water help "glue" the particles together in a process called **cementation**. Together, compaction and cementation are known as **lithification**, which turns the sediments into solid rock. A good example of clastic limestone is **coquina**, which is mostly made of broken shell pieces.

Non-clastic limestone forms either by **chemical precipitation** or by **biological processes**. **Biochemical limestone** forms when tiny marine organisms like plankton or coral use calcium carbonate to build their shells or skeletons. When these organisms die, their remains settle on the ocean floor, undergo **deposition**, and eventually become rock through lithification. **Chalk** is an example of this type. **Chemical limestone**, on the other hand, forms when calcium carbonate comes out of a water solution, especially in caves or around hot springs. When water rich in dissolved calcium carbonate drips from a cave ceiling, it loses carbon dioxide, causing the calcium carbonate to **precipitate**. Over time, this builds up into cone-shaped rock formations that rise from the cave floor, called **stalagmites**. Stalagmites grow as layer after layer of calcium carbonate is deposited from dripping water, often taking thousands of years to form. Another type of chemical limestone is **travertine**, which often forms in this way.

In both types, the processes of **weathering**, **deposition**, **precipitation**, and **lithification** are key to turning soft materials like shells or dissolved minerals into the hard rock we know as limestone. These rocks give us clues about Earth's ancient environments, like warm, shallow seas or underground cave systems.

All clastic sedimentary are made from of older rocks. These fragments from the process of . then moves these fragments where they settle in in a process called . These particles are compacted and then glued together in a process called . Compaction and cementation, known as , together turn the sediments into solid rocks.

Non clastic rocks are not formed from the . They form from chemical precipitation or by biological processes.

Most limestones are made from . The formula is $CaCo_3$.

Clastic limestone usually forms at the bottom of

Clastic limestone is usually made from the remains of

Clastic sedimentary rocks are formed from the layering of rock and shell fragments. These fragments are called

limestone formed from , forms when calcium carbonate comes out of a water solution, especially in or around hot springs.

When water rich in calcium carbonate drips from a cave ceiling, it loses carbon dioxide, causing the calcium carbonate to . Over time, this up into cone-shaped rock that rise from the cave floor, called stalagmites. Stalagmites grow as layer after layer of calcium carbonate is from dripping water, often taking of years to form.

A type of limestone that forms from chemical precipitation is

Limestone is a good example of a sedimentary rock that forms through different processes. As a result, different types of limestone have different properties.

🪨 **Clastic Limestone Example: Coquina**

Rock Type: Clastic Limestone
Name: **Coquina**

Properties:

- **Appearance**: Light-colored, porous, and rough; made up almost entirely of broken shell fragments.
- **Texture**: **Coarse-grained** with visible shell pieces loosely cemented together.
- **Hardness**: Relatively **soft** and crumbly—can be broken easily by hand.

- **Porosity**: **High** porosity due to the spaces between shell fragments.
- **Formation**: Forms in **high-energy, shallow marine environments** like beaches, where waves break up shells and deposit them in layers.
- **Uses**: Sometimes used as a decorative stone or lightweight building material.

🧱 **Non-Clastic Limestone Example: Travertine**

Rock Type: Non-Clastic Limestone
Name: **Travertine**

Properties:

- **Appearance**: Creamy white to tan, often with **banded or layered patterns**; can be polished to a smooth finish.
- **Texture**: **Fine to medium-grained** with a crystalline structure; may have small holes (from escaping gas during formation).
- **Hardness**: **Moderately hard**—stronger than coquina, can be cut and polished.
- **Porosity**: **Moderate**; may have small cavities but denser than coquina.
- **Formation**: Forms in **caves or hot springs** when calcium carbonate **precipitates** out of mineral-rich water. Grows in layers over time.
- **Uses**: Common in **floor tiles**, **countertops**, and **monuments** due to its attractive appearance and polishability.

Write a short comparison of Coquina and Travertine.

Start with a statement that identifies what they are. Discuss any similarities. Then discuss the differences. Can you explain why Coquina is porous and can't be polished. Why is Travertine nonporous and can be polished? Take note of the exemplar below.

A tennis ball and a basketball are **both** used in sports, **but** they have different properties that **affect** how they are used. A tennis ball is much smaller and lighter than a

basketball, **which** makes it easier to hit with a racket. It is also covered in fuzzy felt, so it grips the air and slows down slightly when it's moving, helping players control its speed and spin. **In contrast**, a basketball is larger, heavier, and made of rubber or synthetic leather, **so** it can bounce well on hard surfaces like a court.

Although both balls are filled with air, they are inflated to different pressures. A tennis ball is less pressurized, which gives it a softer bounce suitable for a smaller court. A basketball is more pressurized, and this allows it to bounce higher and faster, **which** is necessary in a game that involves dribbling and passing. **Because** the basketball is bigger and heavier, it is designed to be used with hands, **whereas** a tennis ball is meant to be hit with a racket.

Overall, the size, material, and air pressure of each ball determine how it performs in its sport, and these differences explain why each is suited to its specific game