



Obsidian is the result of volcanic lava coming in contact with water. Often the lava pours into a lake or ocean and is cooled quickly. This process produces a glassy texture in the resulting rock. Iron and magnesium give the obsidian a dark green to black color. Obsidian has been used by prehispanic Mexicans as cutting tools, weapons, and for ceremonial purposes which have been found in Mexico's pyramids by archaeologists in excavations.

Obsidian comes in several varieties and colors from dark green to dark brown and black, also can show sheens of gold or green, yellow, blue and purple colorations. Hardness is 5 to 5.5 (much softer than quartz). Obsidian can contain small bubbles of air that are aligned along layers created as the molten rock was flowing just before being cooled. These bubbles can produce interesting effects such as a golden or silver sheen, known as *Sheen Obsidian* or a rainbow sheen called *Rainbow Obsidian*. Inclusions of small, white, radially clustered crystals of *crystalite* in the black glass produce a blotchy or snowflake pattern called *Snowflake Obsidian*.

Some obsidian is erupted as lava flows at the ground surface. Portions of this obsidian flow are mixed with layers of pumice, a glassy, bubble-rich, lightweight rock that develops when water vapor (steam) escapes rapidly from the molten glass at or near the ground surface. Sometimes obsidian of excellent quality develops as surface lava flows. However, the best quality obsidian often forms below the ground surface around volcanic vents. Silica-rich magma squeezes into rock fractures to form layers and lenses of obsidian that are relatively free of dirt, ash and other impurities.

Changes in magma composition and water content often occur during the eruption and subsurface emplacement of obsidian flows. The high viscosity of the molten obsidian prevents effective mixing of these magmas, resulting in obsidian that is "streaked" with different layers or colors. Each of these streaks or lines may represent a distinct pulse of an obsidian eruption. You can visualize the process that results in streaked obsidian if you consider two blobs of green and red taffy (a viscous candy) that are mixed together. Distinct streaks of red and green taffy result as the blobs are mixed. In the case of obsidian, the slow flow of stiff, viscous magma away from the source vent provides the mixing needed to create the layered or streaked varieties of obsidian.



Black, Mahogany & Snowflake Obsidian

A certain amount of water is always present in obsidian. Very small inclusions of water vapor in the form of bubbles often are trapped in the glass. Tiny gas bubbles that have been stretched nearly flat along the flow layers in obsidian generally cause the reflectance of gold sheen and silver sheen obsidian. Some of these bubbles are visible to the naked eye.

Obsidian is relatively unstable from a geologic perspective. It is rare to find obsidian older than about 20 million years, which is very youthful in comparison to most continental rocks that form the Earth's crust. Over a long period of time, obsidian gradually changes from glass to rock in a process known as "devitrification." In this process, the silica molecules within the glass slowly rearrange into organized crystal patterns. The "snowflakes" in snowflake obsidian are quartz crystals that have formed through devitrification of the original obsidian. The crystals that develop through devitrification cause obsidian to lose its conchoidal fracture and glassy texture.

Based on information from the 16th century, John Clark made a deep analysis of the original Nahua notion of obsidian types. Thanks to this study, we now have some information which allows us to classify obsidians, based on technical, aesthetic, and ritualistic attributes. "White Obsidian" is gray and transparent; "Master's Obsidian" or *toltecaiztli* is blue-green with different degrees of transparency and brightness and sometimes has golden hues (because of its similarity with *chalchihuitl* it was used to make ornaments and ritual objects); *Itzcuinnitzli* is speckled with yellow, brown & red colors, commonly known as "Meca" or stained, "Common Obsidian" is black and opaque, used to make grinding and bifacial instruments as well as mirrors used by the Aztecs; "Black Obsidian" is bright and has different degrees of translucency and transparency.



Duke University Museum Of Art

The Duke University obsidian mirror is unusual in that it is highly refined and convex on both sides. It would have been ground and polished by hand using an abrasive substance without metal tools. Its shape is not a perfect circle. Extremely striking, however, is the fact that, despite its translucency, it has several large lentoid, almost flame-like inclusions that are visible when the disk is held up to light. This suggests that it may have indeed been appreciated for both its mirror and glass-like qualities simultaneously. Identified it to be of Aztec origin, pointing out the association of obsidian mirrors to the Aztec deity Lord Tezcatlipoca, whose name literally means "Smoking Mirror."

Medicinal Use Of Obsidian

To the people of pre-Hispanic Mexico, obsidian had remarkable medicinal uses. Aside from its biological efficacy, its medicinal use was largely due to the ritualistic attributes and its particular physical properties - such as the case of *chalchihuitl*, commonly known as jade.

As an example of this magical-ideological and healing view of obsidian, Indians would come from everywhere to the temple of Texcatlipoca to receive the divine medicine, and so they put it anywhere it hurt, and they felt a significant healing it seemed to them something from heaven.

Also, it was said that if a pregnant woman saw an eclipsing sun or moon, the baby in her womb would be born with split lips. That is why pregnant women do not dare look at an eclipse, they would put a small knife of black stone in the bosom, which touched the flesh. In this case, it is interesting that obsidian was used as an amulet, which protected the wearer against the designs of the gods.

There was also the belief that due to its similarity with certain organs, such as the kidney or liver, the river pebbles of obsidian had the power to cure those parts of the body. Knives, blades, swords, and daggers and just about all cutting instruments used by the Indians were made from obsidian – the stone they called *iztli*.

When the powder of this stone whether in blue, white, or translucent black was mixed with pulverized crystal, it would remove film and glaucoma from the eyes. The *toltecaiztli* or knife stone of reddish black color had similar attributes; *iztehuilotl*, was a very black and bright crystalline rock brought from the upper Mixteca region and surely belonged to the *iztli* varieties. It was said to scare demons away, scatter serpents and when poisonous, it also received favors from royalty.

The Sound Of Obsidian

When obsidian breaks and its fragments hit each other, it makes a specific sound. It had a special significance to the Indians and they compared the sound to just before a storm with the current of tempestuous waters. Among the literary testimonies on this subject is the *Itzapan nonatzcayan* (place where obsidian rocks creak in the water) poem. Itzapan nantzcaya, the terrible dwelling of the dead, where *Mictlantecutli* begins his majestic reign. It is the final home of humans, there dwells the moon, which illuminates the dead, it is the region of obsidian stones; with great rumor they crackle and creak over the waters and they thunder and push to form horrific tempests.

Based on analyses of the Latin and Florentine Vatican manuscripts, the researcher, Alfredo López-Austin, concluded that, according to Mexica mythology, the eighth level which comprises celestial space has corners of obsidian slabs. The fourth level of the road of the dead going towards Mictlán was a spectacular "hill of obsidian", while on the fifth level, "obsidian wind prevailed". Finally, the ninth level was the "place of the obsidian of the dead" - a space without a hole for smoke called Itzmictlan apochcalocan.

The dazzling varieties of gem-quality obsidian from Mexico include: mahogany, red, jet black, brown, rainbow, gold sheen, silver sheen, green, snowflake and more.

Tezcatlipoca was a deity of war and discord, who could also bring good fortune.

According to legend, Tezcatlipoca's foot was bitten off by the Earth monster during the battle waged at the time of the separation of the Earth and waters; he replaced it with a serpent and smoking mirror. He also often wore a large mirror on his head or chest, as is known from ancient Mesoamerican paintings from the ancient Codex Borgia for an image of Lord Tezcatlipoca depicted with obsidian disks on chest and foot.

Obsidian mirrors were adopted by Mesoamerican rulers as objects of power and divination, granting them a medium through which they could look into the future and connect with the realm of the gods. Both reflective and translucent, the obsidian mirror was seen as a threshold between two worlds, with the obsidian conceptualized as a membrane or tissue separating this earthly world from the beyond. Many ancient depictions survive showing mirrors being worn as part of ceremonial and military costumes, especially by the ruler.

