Turquoise – The December Birthstone

Background

Turquoise is one of the most valuable, non-transparent minerals and the only gemstone belonging to the phosphates family. As a cryptocrystalline aggregate, it is almost always opaque, but rare translucent stones are known to exist. Formed over millions of years, the gemstone has developed near water tables located in semi-arid and arid environments, which is why deposits of turquoise are often found in weathered igneous rock that contains copper minerals. The stone crystallizes in many different forms, e.g., nodules, disc-shaped or flattened nuggets, and veins deposited in the cracks of host rocks or formed in a cavity lined with quartz crystals. Specimens found nearest the surface of the earth are usually the hardest and most desired, having had a chance to dry or cure. Otherwise, they can be chalk-like and too porous to be used unless treated with a sealant such as oil, paraffin, liquid plastic or glycerin.

The name turquoise came into use only in the 13th century when a French trader bought this gem from a Turkish market. He called it "Pierre Turquoise," meaning Turkish stone. Turquoise is one of the earliest known stones to be used in jewelry. The Egyptian pharaohs used it more than 5500 years ago, as evidenced by a tomb excavated in 1900 that contained the mummified remains of Queen Zer, who was found wearing four magnificent turquoise bracelets on her arm. Beads dating back to 5000 BC, along with daggers, sword hilts, horse trappings, bowls, cups, and other ornamental objects have been found in areas extending all the way from Mesopotamia (now Iraq and Iran) to Siberia. To the Chinese, turquoise is second only to jade. Similarly, in Tibetan culture, turquoise is an essential and highly valued stone and is preferred over any other gemstone. Virtually every Tibetan possesses some turquoise and it is worn by women and men alike. In North America, the gem was an accepted source of currency long before Columbus arrived and it has also been found in ancient burial sites throughout Central and South America.

The color, texture and matrix of natural turquoise are more important than the cut, carat weight or clarity as the deciding factors of its price. Matrix or "spiderwebbing," the unique markings in turquoise, can range in color from black to reddish and are created by deposits of substances such as iron pyrite, iron oxide, and rhyolite. When an even pattern forms over the stone, it enhances the value of the gem.

Composition, Chemical Formula, Colors, and Sources

Composition – hydrated copper aluminum phosphate

Chemical Formula – CuAl₆(PO₄)₄(OH)₈·4(H₂O)

Colors – turquoise is not only the name of the stone, but also the name of the color associated with the stone—usually a greenish blue to sky blue or a mix between the two colors. However, turquoise is actually found in yellow-green and blue-violet specimens, as well. Variations in color are due to the presence of metals, such as copper impurities in the case of blue turquoise, chromium or vanadium impurities in the case of green turquoise and iron impurities for yellow turquoise. The rare specimens of blue-violet color contain strontium impurities. The most beautiful turquoise color is said to be the ‘robin's-egg-blue’ or ‘sky-blue’. Historically, since gems with the best blue color were mined in Iran (former Persia), the color is also described as ‘Persian Blue’.

Sources – Turquoise can be found anywhere in the world and is often recovered as a byproduct of large-scale copper mining operations, but high-grade turquoise is mostly found in Iran, China, Tibet and southwest United States (specifically Arizona, California, Colorado, Nevada, and New Mexico). While the United States is the largest producer of turquoise, much of the specimens have a light color and are porous and chalky — only about 10% is of gem quality. Notable deposits of turquoise are also found in Afghanistan, Armenia, Australia, Brazil, Chile, Egypt, Iran, Kazakhstan, and Mexico.

Note: Turquoise is fragile—just slightly stronger than window glass—so special care must be taken when handling it. Porosity causes turquoise to easily absorb and retain dirt, grease and smell for long periods, therefore, contact with strong perfumes or chemicals should be avoided. It is also easily disturbed by heat, sunlight, moisture, perspiration, and dryness, and can actually change color with exposure to skin oils. The Zachery treatment, a proprietary process used since the 1980's, decreases the material’s porosity without the addition of polymer, and treated stones can only be identified through chemical analysis (they contain significantly more potassium than untreated stones).
Identification

Streak – white with a greenish tint
Hardness – 5 – 6
Crystal system – triclinic
Transparency – opaque
Specific gravity – 2.6 – 2.8 (average)
Luster – dull to waxy, vitreous in macro-crystals
Cleavage – perfect in two directions, but is not often seen
Fracture – conchoidal and smooth
Habits – crystals rarely large enough to see, usually massive, cryptocrystalline forms as nodules and veinlets
Associated Minerals – include pyrite, limonite, quartz and clays
Best Field Indicators – crystal habit, hardness, luster, color and associations

Folklore, Legend and Healing Properties

Turquoise with red or dark-red veins is believed to be sacred and is widely sought after. According to occultists, turquoise is the only stone which can die. It needs to "breath" to conserve its deep natural color. Lack of air will eventually turn the stones greenish and cause them to lose their metaphysical usefulness and monetary value.

In the 13th century, turquoise was thought to protect the wearer from falling, especially from horses. Legend has it that the Indians believed if turquoise was affixed to a bow, the arrows shot from it would always hit their mark. The Persians believed that if a person saw a full moon reflection on a natural turquoise gemstone, he would have good luck and be protected from evil. In some civilization natural turquoise was thrown in a river while praying to the rain gods to appease them in order to get good rains.

Turquoise is a stone that makes sure the body is provided with all nourishment, vitamins and minerals, leading to the claim that it is beneficial to general physical well-being and should be in every one's first aid kit. It is thought to help high blood pressure, purify the blood and benefit the liver. It can also be used to treat ailments of the throat, lungs, and skin (such as eczema, acne and scars). Turquoise strengthens teeth and rinsing daily with turquoise water (after brushing) heals gingivitis.

For those who suffer from ailments of the joints, like arthritis, gout, and inflammations of the joints, this stone may bring relief because turquoise is said to diminish pain. Turquoise strengthens its wearer's immune system and makes sure the body is protected against viral infections like influenza, the measles and mononucleosis.

Trivia

Turquoise is the wedding anniversary gemstone for the 5th and 11th year of marriage and in Russia it is popularly used in wedding rings.

One of the largest pieces of turquoise and matrix in the modern world, perhaps the largest nodule ever uncovered, was discovered at the Number 8 mine on June 23, 1954, by T. G. Edgar, J. M. Edgar, and Marvin Symes. This specimen was 33 inches long, 18.5 inches wide, and seven inches thick. Cleaned and polished it weighed 150 pounds. The nodule was of excellent texture, good color and hardness, and ranked with any turquoise of good commercial grade.

Turquoise is the official state gem of Arizona, and in Iran, where some of the best stones in the world are found, it is the national gem.

Sources:
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