

Gemstones

Donald W. Olson, mineral commodity specialist for the U.S. Geological Survey, compiled the following information on gemstones, which are appreciated above all other minerals for their lasting value and rare beauty.

Humans have been intrigued by gemstones since prehistoric times. Gemstones have been valued as treasured objects throughout history by all societies in all parts of the world. The first stones known to have been used for making jewelry include amber, amethyst, coral, diamond, emerald, garnet, jade, jasper, lapis lazuli, pearl, rock crystal, ruby, serpentine and turquoise. These stones served as status symbols for the wealthy. Today, arguably, gems are worn more for pleasure and in appreciation of their beauty than to demonstrate wealth.

The term gemstone refers to any mineral (natural or synthetic) used for personal adornment, display or as an object of art because it possesses beauty, rarity and durability. Of more than 4,000 mineral species, only about 100 possess all of these attributes. The gemstone category also includes some materials that are not usually considered to be minerals, such as organic materials, like amber, or materials derived from organic processes, like pearl. Diamond, emerald, ruby and sapphire are usually called “precious gemstones”; the remaining gemstones are called “semi-precious.” Synthetic or cultured gemstones are human-made and have the same chemical, optical and physical properties as their natural counterparts. Silicates compose the largest group of gemstones; oxides and quartz compose the second largest.

In 2007, the combined value of U.S. natural and synthetic gemstone production was \$64.3 million. The estimated values for natural and synthetic gemstones were \$12 million and \$52.3 million, respectively. Nine states, led by Tennessee and Oregon, produce 83 percent of U.S. natural gemstones, which include agate, beryl, coral, garnet, jade, jasper, opal, pearl, quartz, sapphire, shell, topaz, tourmaline, turquoise and many other gem materials. U.S. synthetic gemstone production included moissanite, diamond, garnet and turquoise. Some states are known for the production of a single gemstone material, such as Tennessee and its freshwater pearls. Other states produce a variety of gemstones; for example, Arizona’s gemstone deposits include many types, from agate and amethyst, to opal and turquoise. Although there are many domestic diamond-bearing deposits, only one dig-for-fee operation, run by the state of Arkansas, is producing at this time.

Although the United States does produce some gems, it imports 99 percent of domestic consumption. In 2007, gemstone imports were estimated to be valued at \$19.6 billion, of which 83 percent came from Israel, India and Belgium. Diamond made up 95 percent of these imports. In 2007, the U.S. market for unset gem-quality diamonds was estimated to have exceeded \$17.7 billion, accounting for more than an estimated 35 percent of world consumption. The domestic market for natural, unset nondiamond gemstones was estimated to be about \$1.03 billion. The United States is expected to dominate global gemstone consumption throughout the rest of this decade.

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Samples of selected gemstones. Image from *Minerals in Your World*.