

Lazulite or Lazurite?

It's easy to get two minerals confused when they have similar properties, but it is even worse when the two similar minerals have almost identical names. This is the case with lazurite and lazulite. It makes a big difference! One is a pleasant blue mineral found in a variety of rocks; the other is the major blue mineral in the rare gem material lapis lazuli. Clearly one needs to keep them straight! To make things even worse, lazurite is the mineral found in lapis lazuli.

Lazulite takes its name from the German name "Lazustein" or "blue stone". It is a phosphate mineral with the formula $(\text{Mg,Fe})\text{Al}_2(\text{OH})_2(\text{PO}_4)_2$. It is a deep blue mineral crystallizing in the monoclinic system. It is usually found in granular aggregates, but may form well twinned tabular crystals. It has a hardness of 5.5 to 6, and has a couple of directions of cleavage that are generally hard to see. It is found in quartz veins and in metamorphic rocks such as quartzite. The blue lazulite against white quartz makes attractive specimens. Some famous localities in the U.S. are Graves Mountain, Georgia and the Champion Mine in Mono County, California. Nearer to home, small amounts have been reported from the quartzites near Baraboo, Wisconsin.

Lazurite is the main mineral in the gemstone lapis lazuli. It is a silicate with a formula of $(\text{Na,Ca})_8(\text{Al,Si})_{12}\text{O}_{24}(\text{s},\text{SO}_4)$. Its name comes from the Persian word for the stone, "luzhuward". Lazurite is also deep blue, but it crystallizes in the isometric system. It usually occurs in granular masses. Its hardness is 5-5.5 and it has one weakly developed cleavage. True Lapis is an intergrowth of lazurite with other minerals, primarily pyrite, calcite, diopside and hauynite. It usually occurs in marbles. The combination of colors and patterns is what gives lapis lazuli its appeal.

Lapis lazuli was been known and used by the ancient Egyptians. Not surprisingly it was considered a gem representing the skies or heaven, thus was thought to denote light, truth and wisdom. It was thus often shaped into eye-shaped gems. It was often worn by Egyptian judges. An amulet graced the brow of Ra. Lapis is noted in Revelations as a stone in the Breastplate of Aaron. In China lapis was worn during the Manchu dynasty for services in the Temple of Heaven. The Romans and Greeks used it as a cure for fevers and melancholy. (I guarantee that it would cheer me up to be given some lapis lazuli). These old records must be read with care, however, as some material referred to as lapis is really sapphires.

So how does one tell lazulite from lazurite from sapphire? Sapphire is easy - since it is a variety of the mineral corundum, its Mohs hardness is 9 while lazulite and lazurite are both 6 or less. There are certain technical optical

tests or X-ray diffraction that will distinguish lazurite from lazulite. But a simple test is association. Lazulite is often intergrown with quartz. Lazurite, or true lapis, is not. In fact, lazurite is part of a family of minerals (the feldspathoids) that **never** occur stably with quartz. Here is a fine example of how a bit of observation can substitute for data obtained from big expensive equipment!

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References:

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