Epidote

Epidote is relatively common but attractive rock-forming mineral. The pleasant green mineral seen in unakite is epidote, as are the deep green prismatic crystals in the vugs in basalt vugs in the mines of the Keweenaw Peninsula. The green color of basalts at Taylor's Falls, MN is due to abundant epidote.

Epidote is a hydrated calcium, iron, aluminum silicate and is relatively easily to identify. It is non-metallic, has a dark green to pistachio green color, and is harder than glass. It can be massive, or as drusy to radiating prismatic crystals. It is often found in veins and filling vugs. The green color is peculiar enough to be a good tip-off. Epidote looks like green quartz, but is softer than quartz and does have a cleavage. Epidote can resemble olivine, however olivine is not found with quartz while epidote is often found with, and at times even embedded in, quartz.

Epidote was named by Rene Hauy, a mineralogist at the University of Natural History in Paris in the early 1800's. The name comes from the Greek "*epi*" for "over" plus "*didonai"* for "to give" which is supposed to translate roughly as "increase". This refers to Hauy's observation that some of the mineral's prism faces are longer than others. Hauy is justly famous for his pioneering work in crystallography, but the rational for the name epidote seems, as John Sinkankas put it "incomprehensible". A discredited synonym for epidote, pistacite, comes from the Greek for pistachio nut, a reference to the mineral's color.

Epidote forms from hydrothermal fluids or in rocks metamorphosed at fairly low temperatures and pressures. It forms with other green minerals such as chlorite, pumpellyite and actinolite. Thus, rocks subjected to low grades of metamorphism are often referred to as "greenstones" or "greenschists". (This is not to be confused with the gem "greenstone" which is a variety of pumpellyite. Adding to the confusion is the fact that the gem greenstone occurs in the rock greenstone.)

Epidote is extremely common in the Keweenawan volcanic rocks, which can be traced in a belt from Taylor's Fall, MN, across northern Wisconsin, and through the Keweenaw Peninsula of Michigan. These rocks were originally mostly basaltic lava flows. The epidote formed as the flow were buried in a thick volcanic pile, and essentially "cooked" by the heat of the overlying lavas.

Despite its hardness and deep color, epidote is not often used as a gem because the crystals rarely are clear or large enough to facet. Its most

familiar lapidary use is as the material called "unakite" Unakite gets its name from the Unaka range of the Great Smoky Mountains. It refers to a particular type of metamorphosed granite in which the feldspar is bright pink and has been partly replaced by green epidote. Light gray to white quartz is also present, giving a pleasing color contrast. Unakite is found throughout the Blue Ridge area of Tennessee, North Carolina and Virginia. It can be found elsewhere. For example, metamorphosed granite similar to unakite occurs near Waupaca and Wausau, Wisconsin.

- Dr. Bill Cordua, University of Wisconsin-River Falls

References:

Dietrich, R.V. and Skinner, B.J., 1979, *Rock and Rock Minerals*, New York, John Wiley and Sons Pub., 319 p.

Sinkankas, John, 1964, *Mineralogy for Amateurs*, New York, Van Nostrand Reinhold Co., 585 p.