

## Mineral Hardness Testing

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Mineral hardness is a property that should be one of the first determined by a collector seeking to identify the species of an unknown. I constructed my first hardness set over 20 years ago by epoxy gluing small pieces of minerals of Moh's Hardness scale 2 – 8 onto short lengths of dowel, (photo below).



However, the sharp point, (or edge), on the small mineral bits on my hardness “pencils” wore away quickly. To reduce the wear, I learned to start with the hardest point and work my way softer when testing unknowns.

The usual hardness determination method is to attempt to scratch the unknown with the point. Any powder produced by the scratch is blown or rubbed off before verifying the presence of a scratch on the surface of the unknown mineral, (and not an abrasion residue left from the hardness point). An eye loop or stereo microscope is often useful in the scratch examination.

Last year I decided to spring for one of the commercially made hardness pencil sets. I bought the “Deluxe Hardness Pick Set” from Mineralab, \$69. plus shipping, (<http://www.mineralab.com/Hardness.htm>). Photos of this pencil set are below.



Although a bit “pricey”, I have not regretted this purchase. The quality is first class. Each point, hardness 2 – 9, is retained in a machined metal, (brass?), holder. The hardness points are not minerals, but rather appropriately hardened metals, or in the case of hardness 2, plastic. The set comes with a small sharpening “stone” to restore the original point, when it becomes dulled with use. The points can be maintained very small and sharp; so small, in fact, that with care and practice, the hardness of 1 to 2 mm micro crystals can be ascertained under a stereo microscope!

The hardness set is packaged in a “mahogany finished” wooden case, secured with a, knurled, brass screw. The set also includes small sheets of brass, (labeled as hardness 3.5), and glass, (labeled as hardness 5.5). Scratch your unknown against these plates first to determine a quick starting point for pencil testing. A small magnet is provided to assist in the identification of several common magnetic minerals, (e.g. magnetite, pyrrhotite, ilmenite). And finally, a small ceramic streak plate is included for checking the unknown’s streak property.