Chalcopyrite - $CuFeS_2$

Hardness = 3.5 - 4. Cleavage: Poor/indistinct. Brittle. Chemical behavior somewhat like bornite. Soluble in HNO_3. Attacked by other acids; crystals slowly but powder more rapidly. Inert to cold saturated citric acid. Use dilute HCl or cold saturated citric acid to dissolve enclosing calcite but avoid prolonged exposure which may produce an iridescent tarnish. (Air abrasion or a vibratory impact tool may be preferable to acid treatment.) Follow such acid treatment with distilled water rinses (several times), NH_3 (one part) in water (20 parts) then rinse with distilled water until free of NH_3 odor. Iridescent coating may be deliberately imparted with concentrated HCl. Calcite-encased crystals may be internally fractured and prone to disintegration if matrix is removed. When sonicating watch for acid sensitive minerals as bath may be come acidic (especially with decomposing samples); if so basify or replace the bath water. Water or humidity may initiate decomposition or accelerate it in samples where the process has already begun. The surface luster of even slightly decomposed samples can only be unnaturally restored by polishing or air abrasion. Tolerates Iron OUT/EDTA or NH_4HF_2; both reagents which frequently increases luster temporarily to permanently. Can also be derusted with tartaric acid.

References

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