

Bornite - Cu_5FeS_4

Hardness = 3. Cleavage: Poor/indistinct. Behaves similarly to [chalcopyrite](#). Soluble in HNO_3 . Slightly attacked by cold concentrated citric acid. Sonication of decomposed samples may cause the bath to become acidic; basify or discard if acid-sensitive minerals are present. Humidity or immersion in water may accelerate decomposition in samples where this process has already begun. Some samples brightened by NH_4HF_2 ; resulting luster may become dull in hours or longer or in some cases be permanent. Derust with any dithionite recipe. May also be derusted in a 25% oxalic acid solution for no more than eight hours but samples cleaned this way are prone to rapidly tarnish. Avoid removing associated copper secondaries (malachite, azurite, etc.) as these are part of the natural mineral paragenesis.

References

Mindat: <https://www.mindat.org/min-727.html>

Handbook of Mineralogy: <https://www.handbookofmineralogy.org/pdfs/bornite.pdf>

Hardinger, S. (2025) Mineral Specimen Cleaning and Development for the Amateur, 339 p.

Sinkankas, J. (1972) Gemstone & Mineral Data Book, 346 p. Winchester Press, New York.