Pyrrhotite - $Fe_{1-x}S$

Hardness: 3.5 - 4. Cleavage: None observed. Tolerates sonication but bath may become acidic. Very slowly attacked by HCl (use this to remove calcite but minimize exposure) or saturated citric acid. Tolerates oxalic acid. Prone to oxidative decomposition ('pyrite rot' or 'pyrite disease'); store in sealed container over desiccant. Tolerates any dithionite recipe, tartaric acid and NH_4HF_2 (which may brighten some samples).

References

Mindat: https://www.mindat.org/min-3328.html

Handbook of Mineralogy: https://www.handbookofmineralogy.org/pdfs/pyrrhotite.pdf

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

Rohner, T. (2000) Properly clean minerals online cleaning book. www.strahlen.org/stepbystep/mineralien-reinigung2.pdf. In German.

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