Neptunite - $KNa_2Li(Fe^{2+})_2Ti_2[Si_4O_{12}]_2$

Hardness: 5 - 6. Cleavage: Perfect. Inert to long exposure to dilute HCl used to remove massive natrolite from California Gem Mine benitoite specimens. Prolong exposure to concentrated HCl said to reduce crystal luster but this is contrary to the experience of collectors who prepare benitoite specimens by etching in HCl of various strength for up to weeks at a time. Tolerates NH_4HF_2 (used to remove silica gel during a final step in benitoite specimen preparation) for at least three hours. Tolerates all dithionite recipes.

References

Mindat: https://www.mindat.org/min-2883.html

Handbook of Mineralogy: https://www.handbookofmineralogy.org/pdfs/neptunite.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.