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Ferrierite is a silica rich, naturally occurring zeolite having ideal composition, $\text{Na}_2\text{Mg}_2\text{Al}_6\text{Si}_{30}\text{O}_{72}\cdot 18\text{H}_2\text{O}$. High-silica zeolites and their pure silica end members are thermally very stable and, as such, they are of tremendous importance in industrial catalysis.

Hitherto unknown aluminium and magnesium free pure silica form of ferrierite (silica-ferrierite) has been crystallised from aqueous silica solutions in the presence of ethylenediamine and boric acid. Using a platy single crystal with the unit cell dimensions $a = 18.557(6) \text{ \AA}$, $b = 13.889(3) \text{ \AA}$, $c = 7.249(9) \text{ \AA}$, the structure has been refined to a reliability factor, $R_w = 0.10$. On heating silica-ferrierite up to 900°C the guest species are driven out and the tetrahedral framework is retained.

DTA, X-ray diffraction and chemical analysis data suggest that only a negligible amount of boron is substituted in the framework while most of the boron is associated with the guest species.

This work was carried out at the Mineralogy Institute, Kiel University, West Germany with financial support from Alexander von Humboldt-Stiftung.

Reference

1. Wise, W.S. and Tschernich, R.W. (1976) American Mineralogist 61 60.