American Mineralogist, Volume 87, pages 350–354, 20025

On the nature of tincalconite

RUDY L. LUCK* AND GE WANG

Department of Chemistry, Michigan Technological University, Houghton, Michigan 49931, U.S.A.

ABSTRACT

An examination of synthetic crystalline material by single crystal X-ray diffractometry reveals a unit-cell dimension that was previously ascribed to tincalconite. However, the best fit to the reflection data obtained at 291(2) K is obtained with composition $Na_6[B_4O_5(OH)_4)]_3{\cdot}8H_2O$. This formula is different from the $Na_2[B_4O_5(OH)_4)]{\cdot}3H_2O$ previously assigned to tincalconite from an earlier crystallographic study. Additionally, our model fits best with non-crystallographic measurements and agrees with the analysis from a more recent low temperature crystallographic analysis. Tincalconite is best formulated as $Na_6[B_4O_5(OH)_4)]_3{\cdot}8H_2O$. It is trigonal, *R*32, $a = 11.1402$ (11), $c = 21.207$ (3) Å, $Z = 3$, $R = 0.020$ for 512 $F_o > 4\sigma$ (F_o) and 0.021 for all 529 data at 291(2) K.