Crystal Structure and Magnetic Properties of the Compounds $Yb(Zn,Al)_{\sim 6}$ and $YbZn_{\sim 6}$

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The title compounds were synthesized and their crystal structures determined by single crystal X-ray diffraction data. Both compounds crystallize with the cubic space group $Im\bar{3}$. $Yb(Zn,Al)_{\sim 6}$: a = 14.299(4) Å, $wR(F^2) = 0.041$, with $Yb_{25.39(2)}Zn_{138.2(3)}Al_{7.7(3)}$ as the refined composition; $YbZn_{\sim 6}$: a = 14.298(4) Å, $wR(F^2) = 0.079$, with $Yb_{25.05(3)}Zn_{146.83(9)}$ as the refined composition. Their crystal structures are closely related to the YCd_6 type, with two different details: Zn/Al (or Zn) atoms in the 8*c* sites center the cubic interstices of the structure; the pentagonal dodecahedron cavities are partially filled by ytterbium atoms in the 2*a* sites, with an environment topologically similar to that found in the clathrate-I compounds. Magnetic properties of the two compounds are also reported.

Key words: Ytterbium Intermetallic Compounds, Crystal Structure, Heat Capacity, Magnetic Measurements, Resistivity