

O. V. YAKUBOVICH,* N. V. ZAYAKINA,** O. B. OLEINIKOV,** A. V. KOSTIN.** ESSENEITE FROM XENOLITHS IN DACITE LAVAS. CRYSTAL STRUCTURE AND GENESIS

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Esseneite from xenoliths of ultrabasic rocks in dacite lavas of the Ten'-01 paleovolcano at the Lena-Vilyui watershed (East Yakutia) was studied. Empirical formula of the mineral has been obtained using electron microprobe analysis: $\text{Ca}_{0.99}\text{Fe}_{0.52}^{3+}\text{Mg}_{0.32}\text{Fe}_{0.06}^{2+}\text{Ti}_{0.05}\text{Mn}_{0.01}^{2+}\text{Al}_{0.71}\text{Si}_{1.34}\text{O}_6$. Its crystal structure was refined on the basis of the single-crystal X-ray diffraction data, R 0.0152). The resulting crystal chemical formula is ${}^{\text{Ca}}\text{Ca}^{\text{M}}(\text{Fe}_{0.48}^{3+}\text{Mg}_{0.33}\text{Ti}_{0.05}\text{Al}_{0.14})^{\text{T}}(\text{Si}_{1.28}\text{Al}_{0.68}\text{Fe}_{0.04}^{3+})\text{O}_6$. The monoclinic unit-cell parameters are: $a = 9.7610(12)$, $b = 9.8223(8)$, $c = 5.3360(5)$ Å, $V = 441.89(8)$ Å³, $\beta = 105.92(1)^\circ$, $Z = 4$, space group $C2/c$. The distribution of atoms over positions in the crystal structures of Ca-Fe-Al-clinopyroxenes and coordination polyhedra distortion reflect the conditions for the mineral genesis. Formation of the Yakutian esseneite took place in a highly oxidizing environment under a pressure of about 2 kbar and a temperature range of 1200—950 °C.

Key words: esseneite, crystal structure, Ten'-01 paleovolcano, Yakutia.