

Aluminotaramite, alumino-magnesiotalamite, and fluoro-alumino-magnesiotalamite: Mineral data and crystal chemistry

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ABSTRACT

Aluminotaramite, ideally $\text{Na}(\text{CaNa})(\text{Fe}^{2+}_3\text{Al}_2)(\text{Si}_6\text{Al}_2)\text{O}_{22}(\text{OH})_2$, and alumino-magnesiotalamite, ideally $\text{Na}(\text{CaNa})(\text{Mg}_3\text{Al}_2)(\text{Si}_6\text{Al}_2)\text{O}_{22}(\text{OH})_2$, occur in retrogressed eclogites in the Liset kyanite-eclogite pod, near Selje, Vestlandet, Norway. Fluoro-alumino-magnesiotalamite, ideally $\text{Na}(\text{CaNa})(\text{Mg}_3\text{Al}_2)(\text{Si}_6\text{Al}_2)\text{O}_{22}\text{F}_2$, occurs in the Jianchang eclogite, Su-Lu coesite-eclogite province, China. These aluminotaramites always replace other higher pressure amphiboles (nyböite and fluoronyböite), and their higher Al content derives from resorbed garnets and lowered pressure during retrogression from the eclogite to the amphibolite facies. This paper reports complete mineral data for the three new holotypes as obtained by EMP analysis, structure refinement, and optical measurements. The three new minerals and mineral names have been approved with votes 2006-023, 2006-024, and 2006-025, respectively, by the IMA Commission on New Minerals, Nomenclature and Classification.

Holotype aluminotaramite has the unit formula: $^{\text{A}}(\text{Na}_{0.89}\text{K}_{0.01})_{\Sigma 0.90}^{\text{B}}(\text{Fe}_{0.11}^{2+}\text{Na}_{0.82}\text{Ca}_{1.07})_{\Sigma 2.00}^{\text{C}}(\text{Fe}_{1.75}^{2+}\text{Mg}_{1.62}\text{Al}_{1.12}\text{Fe}_{0.42}^{3+}\text{Ti}_{0.07}\text{Zn}_{0.01}\text{Mn}_{0.01})_{\Sigma 5.00}^{\text{T}}(\text{Si}_{6.23}\text{Al}_{1.77})_{\Sigma 8.00}^{\text{O}_{22}}^{\text{W}}(\text{OH}_{1.86}\text{F}_{0.14})_{\Sigma 2.00}$, and $a = 9.7489(5)$, $b = 17.9377(7)$, $c = 5.3233(3)$ Å, $\beta = 104.539(5)^\circ$, $V = 901.1(2)$ Å³; the calculated density is 3.29 g/cm³.

Holotype alumino-magnesiotalamite has the unit formula: $^{\text{A}}\text{Na}_{1.07}^{\text{B}}(\text{Fe}_{0.06}^{2+}\text{Na}_{0.73}\text{Ca}_{1.21})_{\Sigma 2.00}^{\text{C}}(\text{Fe}_{1.06}^{2+}\text{Mg}_{2.40}\text{Al}_{1.20}\text{Fe}_{0.31}^{3+}\text{Ti}_{0.03})_{\Sigma 5.00}^{\text{T}}(\text{Si}_{6.09}\text{Al}_{1.91})_{\Sigma 8.00}^{\text{O}_{22}}^{\text{W}}(\text{OH})_{2.00}$, and $a = 9.7899(7)$, $b = 17.8991(9)$, $c = 5.3192(5)$ Å, $\beta = 104.900(7)^\circ$, $V = 900.7(3)$ Å³; the calculated density is 3.21 g/cm³.

Holotype fluoro-alumino-magnesiotalamite has the unit formula: $^{\text{A}}\text{Na}_{0.99}^{\text{B}}(\text{Fe}_{0.02}^{2+}\text{Na}_{0.77}\text{Ca}_{1.21})_{\Sigma 2.00}^{\text{C}}(\text{Fe}_{1.11}^{2+}\text{Mg}_{2.12}\text{Al}_{1.04}\text{Fe}_{0.68}^{3+}\text{Ti}_{0.03}\text{Mn}_{0.02})_{\Sigma 5.00}^{\text{T}}(\text{Si}_{6.00}\text{Al}_{2.00})_{\Sigma 8.00}^{\text{O}_{22}}^{\text{W}}(\text{F}_{1.04}\text{OH}_{0.96})_{\Sigma 2.00}$, and $a = 9.7414(8)$, $b = 17.9095(13)$, $c = 5.3335(4)$ Å, $\beta = 104.672(1)^\circ$, $V = 900.2(3)$ Å³; the calculated density is 3.26 g/cm³.

Keywords: Aluminotaramite, alumino-magnesiotalamite, fluoro-alumino-magnesiotalamite