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Trabzonite $\text{Ca}_4\text{Si}_3\text{O}_{10} \cdot 2\text{H}_2\text{O}$ a new hydrated calcium silicate

by *Halil Sarp*¹ and *Georges Burri*²

Abstract

Trabzonite, ideally $\text{Ca}_4\text{Si}_3\text{O}_{10} \cdot 2\text{H}_2\text{O}$, has been found near Ikizdere at NW of Varda Yaylasi (Rize) (near Trabzon county) – Turkey and occurs in skarn produced by granitic intrusion in volcano-sedimentary formations. Associated minerals are: spurrite, rustumite, perovskite, calcite, vesuvianite, tobermorite, garnet, killalaite, hillebrandite and molybdenite. The crystals, colourless, are small irregular or hypidiomorphs from 0.1 to 0.2 mm with a white streak and vitreous lustre; transparent. The hardness could not be measured because of small size. Chemical composition determined by electron microprobe is: CaO 50.2, MgO 0.13, MnO 0.04, Na₂O 0.3; Al₂O₃ 0.05, SiO₂ 40.38 and H₂O 7 (weight loss), total 98.1%. The crystal system is monoclinic, space group P_{21} or P_{21}/m with $a = 6.895$ (2), $b = 20.640$ (3), $c = 6.920$ (2) Å, $\beta = 98^\circ$ and $Z = 4$. The $a:b:c$ ratio calculated from unit-cell parameters is 0.3341:1:0.3353. The strongest lines in the X-ray powder diffraction pattern ($d\text{\AA}$ for $\text{CuK}\alpha$, Ivis., hkl) are: 5.71 (35) (021, 120), 3.442 (60) (060, 002), 3.062 (100) (032, 230), 2.912 (30) (102, 201), 2.851 (50) (042, 240), 2.635 (50) (052, 250) and 2.585 (90) (212, 080). The density is 2.9 (meas.) and 3.08 g/cm³ (calc.). Optically, Trabzonite is biaxial (+) with $2V$ (meas.) = $55(5)^\circ$, $2V$ (calc.) = 60° ; $\alpha = 1.632$ (2), $\beta = 1.634$ (2), $\gamma = 1.640$ (2) (589 nm). Dispersion $r > v$ weak to moderate. Optical orientation: $X \wedge c \approx 8^\circ$, $Y = b$, $Z = a$. Trabzonite is named for to honour the vilâyet of Trabzon. This new mineral and mineral name have been approved by the Commission on New Minerals and Mineral Names of the International Mineralogical Association. The complete description of the mineral has been presented at the congress of T.J.K. at Ankara.

Keywords: New mineral, trabzonite, Turkey.

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