
Saponite from Near Ballarat, California

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Abstract: White saponite occurs in joints and open fracture zones in metamorphosed dolomitic limestone near Ballarat, California. The saponite appears to have formed by hydrothermal alteration, possibly during Pliocene times. The material shows a 06l X-ray powder diffraction peak at 1.529 Å, Al₂O₃ and MgO contents of about 4.4 and 23.5%, respectively, and a half-cell octahedral atoms summation value of about 2.82. The saponite appears to consist of a single, uniform clay species; the main impurities are fine shards of diopside and tremolite. The infrared and thermal properties of the Ballarat saponite are similar to those of the Allt Ribhein saponite. It has a lower water-holding capacity than montmorillonite and is characterized by lower Atterberg limits and expansion pressures and higher compaction densities. The apparent density of the saponite, 2.865 g/cm³, is greater than that of montmorillonite. This saponite is available from the Source Clays Repository of The Clay Minerals Society.

Key Words: Engineering properties • Hydrothermal alteration • Saponite • Sepiolite • Source clay • X-ray powder diffraction

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