Fairchildite

\[ \text{K}_2\text{Ca(CO}_3\text{)}_2 \]

Crystal Data: Hexagonal. Point Group: \( 6/m \ 2/m \ 2/m \). As microscopic hexagonal plates, flattened on \( \{0001\} \); typically in dense stony aggregates.

Physical Properties: Cleavage: On \( \{0001\} \), good. Hardness = n.d. \( D(\text{meas.}) = 2.45 \) \( D(\text{calc.}) = 2.45 \) Slowly hygroscopic in air, altering to bütschliite, which may then leach to calcite.

Optical Properties: Transparent. Color: Colorless; light gray to bluish gray in aggregates. Optical Class: Uniaxial (−). \( \omega = 1.533 \quad \epsilon = 1.498 \)

Cell Data: Space Group: \( P\overline{6}_3/mmc. \) \( a = 5.294(1) \quad c = 13.355(2) \) \( Z = 2 \)

X-ray Powder Pattern: Synthetic.
3.192 (100), 2.646 (70), 2.699 (30), 2.168 (20), 2.225 (16), 6.67 (14), 2.039 (14)

Chemistry: (1) Analyses of nearly pure natural material apparently do not exist; identification depends on coincidence of other properties with those of synthetic material.

Polymorphism & Series: Dimorphous with bütschliite.

Occurrence: Formed from fused wood ash in partially burned trees.

Association: bütschliite, calcite.

Distribution: In the USA, many occurrences in forests from trees struck by lightning. Some studied are: from the Grand Canyon National Park, Coconino Co., Arizona; in the Kaniksu National Forest, near Coolin, Bonner Co., Idaho. From near Eganville and Deseronto, Ontario, Canada.

