Alstonite \( \text{BaCa(CO}_3\text{)}_2 \)

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Crystal Data: Triclinic, pseudo-orthorhombic. Point Group: \( \overline{1} \) or \( 1 \). Steep pseudohexagonal dipyramids bounded by pseudohexagonal prisms, to 6 mm, striated strongly \( \perp \) pseudohexagonal [0001] and commonly exhibiting a medial re-entrant \( \parallel \) pseudohexagonal [0001]. Twinning: Common on pseudo-orthorhombic \{1\bar{1}0\} and \{310\}, forming pseudohexagonal groups.


Optical Properties: Transparent to translucent. Color: Colorless to snow-white; also pale gray, pale cream, pink to pale rose-red, which may fade on exposure to light; colorless in transmitted light, showing six or twelve domains. Streak: White. Luster: Vitreous. Optical Class: Biaxial (-). Orientation: X = c; Y = a; Z = b. Dispersion: \( r > v \), weak. \( \alpha = 1.526 \quad \beta = 1.671 \quad \gamma = 1.672 \quad 2V(\text{meas.}) = 6^\circ \)

Cell Data: Space Group: \( \overline{C1} \) or \( C1 \). \( a = 30.14 \quad b = 17.40 \quad c = 6.12 \quad \alpha = 90^\circ \quad \beta = 90^\circ \quad \gamma = 90^\circ \quad Z = 24 \)

X-ray Powder Pattern: Alston, England; essentially identical to paralstonite. 3.55 (100), 2.507 (35), 2.050 (23), 1.941 (19), 1.846 (15), 2.835 (10), 1.589 (8)

Chemistry:

\[
\begin{array}{ccc}
\text{CO}_2 & 29.41 & 29.59 \\
\text{CaO} & 17.60 & 18.85 \\
\text{SrO} & 4.25 & \\
\text{BaO} & 48.54 & 51.56 \\
\hline
\text{Total} & 99.80 & 100.00
\end{array}
\]

(1) Alston, England. (2) \( \text{CaBa(CO}_3\text{)}_2 \).

Polymorphism & Series: Trimorphous with barytocalcite and paralstonite.

Occurrence: Typically in low-temperature hydrothermal Pb–Zn deposits; rare in carbonatites.

Association: Calcite, barite, ankerite, siderite, benstonite, galena, sphalerite, pyrite, quartz.

Distribution: In England, from the Bromley Hill Pb–Zn mine, near Alston, Cumbria, in the Fallowfield lead mine, near Hexham, Northumberland, and at New Bancepeth, Durham. From Mine BK-3, Llantrisant, 10 km north of Cardiff, Wales. From the Vuoriyarvi carbonatite complex, Kola Peninsula, Russia. Found in the Tajno borehole, 70 km north of Bialystok, Poland. From the Garaoulène Zn–Pb orebody, Pierrefitte, Pyrénées, France. In the USA, at the Minerva No. 1 mine, Cave-in-Rock, Hardin Co., Illinois. From the Wittingham Coal Measures, Hunter Valley, New South Wales, Australia.

Name: For the original locality near Alston, England.

Type Material: Mining Academy, Freiberg, Germany, 15818.


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