

# BARITE

BaSO<sub>4</sub>

**Environment:** *Intrusion-related, Epithermal, Volcanogenic massive sulphide*

**Alteration:** *Sericitic, Argillic, Advanced Argillic*

## Characteristics

Barite is a common hydrothermal mineral in a variety of hydrothermal environments. It forms a minor late phase in veins, cavities and vugs, and is a major alteration phase in some stratiform deposits. In the latter, it may also occur as beds of massive barite, laminated barite, framboidal barite, or reworked and brecciated barite.

**Hand Specimen:** Barite is typically white and less commonly yellow, brown, grey, greenish or blue. It occurs as tabular and prismatic crystals.

**Thin Section:** Barite is usually colourless but may have pale yellow or pale blue tints. It occurs in granular aggregates or in masses of subhedral bladed or tabular crystals in veins and as cavity infill. Cleavage traces occur at right angles on (110) or on (010) and as a single set on (001).

## Related Minerals

**Associated:** aluinite, anhydrite, carbonate, kaolinite, quartz, sericite

**Accessory:** calcite, celestite, chalcopryrite, dolomite, fluorite, galena, manganite, pyrite, siderite, sphalerite, stibnite

## Discussion

Barite precipitates with decreasing temperature from oxidized fluids with moderate salinities over a temperature range up to 300°C. At low salinities, barite becomes more soluble (retrograde solubility) above ~100°C. Late barite fills veins and cavities in epithermal environments and jasperoids, reflecting deposition associated with decreasing temperature and increasing oxidation. In the seafloor environment, barium is transported in saline reduced fluids, but precipitates through interaction with cool seawater containing sulphate. This may happen below the seafloor and/or at the seawater - rock interface, where extensive barite-rich sedimentary beds form.

## References

- Arribas, A., Jr., 1995. Epithermal high-sulfidation deposits - a review, *in* J.F.H. Thompson, ed., *Magmas, Fluids, and Ore Deposits: Mineralogical Association of Canada, Short Course Volume 23*, 419-454.
- Goodfellow, W.D. and Lydon, J.W., 1993, *Geology and genesis of stratiform sediment-hosted (SEDEX) zinc-lead-silver sulphide deposits*, *in* Kirkham, R.V., Sinclair, W.D., Thorpe, R.I. and Duke, J.M., eds., *Mineral Deposit Modeling: Geological Association of Canada, Special Paper 40*, p. 201-251.
- Kuehn, C.A. and Rose, A. W., 1995, *Carlin gold deposits: origin in a deep zone of mixing between normally pressured and overpressured fluids: Economic Geology*, v. 90, p. 17-36.
- Sewell, D. M. and Wheatley, C.J.V., 1994, *The Lerokis and Kali Kuning submarine exhalative gold-silver-barite deposits, Wetar Island, Maluku, Indonesia*, *in* van Leeuwen, T.M., Hedenquist, J.W., James, L.P. and Dow, J.A.S., eds., *Mineral Deposits of Indonesia; Discoveries of the Past 25 years: Journal of Geochemical Exploration*, v. 50, p. 351-370.

## Figures

- 9.1 OC. Tabular crystals of barite as infill of a vug in silicified andesites. Dobroyde prospect, New South Wales, a high-sulphidation epithermal precious metal prospect.
- 9.2 DC. Tabular barite intergrown with pyrite in a vein. Dobroyde prospect, New South Wales.
- 9.3 TS (PPL). Vein/cavity infill of coarse-grained pale grey-pink (high relief) barite overgrown on quartz and sulphides (galena overgrown on pale yellow sphalerite). FOV = 2.2 mm
- 9.4 TS (XPL). Large tabular crystal of barite overgrown on sulphides (sphalerite and galena) and in turn overgrown by chalcedonic quartz. Fractures cutting through the barite are infilled by chalcopryrite. Klitik area, southeastern Java, Indonesia. FOV = 2.2 mm.

## Submitted by:

Michelle M. Hawke, Terry Leach and Co., New Zealand  
Anne J.B. Thompson, PetraScience Consultants Inc., Vancouver, British Columbia  
John F.H. Thompson, MDRU, University of British Columbia, Vancouver, British Columbia



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