Gonnardite

\[ \text{Na}_2\text{CaAl}_4\text{Si}_6\text{O}_{20}\cdot7\text{H}_2\text{O} \]

Crystal Data: Tetragonal. Point Group: \( \overline{4}2 \). Fibrous crystals, at the centers of radiating spherulites, to 3 cm; massive.

Physical Properties: Hardness = 5 D(meas.) = 2.25–2.36 D(calc.) = 2.33


Optical Class: Biaxial (+) or (-); commonly zoned. Orientation: \( X = c \). \( \alpha = 1.497–1.508 \) \( \beta = 1.498–1.510 \) \( \gamma = 1.499–1.513 \) 2V(meas.) = 50°

Cell Data: Space Group: \( \overline{4}2d \). \( a = 13.21(1) \) \( c = 6.622(4) \) \( Z = 2 \)

X-ray Powder Pattern: Chaux de Bergonne, France; may be confused with natrolite and tetramnolite.

2.92 (100), 5.93 (80), 6.70 (60), 4.44 (60), 4.74 (50), 3.23 (50), 3.12 (40)

Chemistry:

\[
\begin{array}{ccc}
\text{SiO}_2 & 43.45 & 43.20 & 44.58 \\
\text{Al}_2\text{O}_3 & 27.91 & 27.90 & 25.22 \\
\text{CaO} & 6.95 & 3.61 & 6.94 \\
\text{Na}_2\text{O} & 8.69 & 13.16 & 7.66 \\
\text{H}_2\text{O} & [13.00] & 11.74 & 15.60 \\
\hline
\text{Total} & [100.00] & 99.61 & 100.00 \\
\end{array}
\]

(1) Chaux de Bergonne, France; by electron microprobe, \( \text{H}_2\text{O} \) by difference; corresponding to \( \text{Na}_{2.25}\text{Ca}_{0.98}\text{Al}_{1.32}\text{Si}_{5.17}\text{O}_{20}\cdot5.70\text{H}_2\text{O} \). (2) Aci Trezza, Sicily, Italy; corresponds to \( \text{Na}_{3.5}\text{Ca}_{0.5}\text{Al}_{4.5}\text{Si}_{5.9}\text{O}_{20.8}\cdot5.35\text{H}_2\text{O} \). (3) \( \text{Na}_2\text{CaAl}_4\text{Si}_6\text{O}_{20}\cdot7\text{H}_2\text{O} \).

Mineral Group: Zeolite group.

Occurrence: In cavities in basalt, leucite tephrite, and altered skarn.

Association: Zeolites, calcite.

Distribution: Well characterized material from: in France, at Chaux de Bergonne, Gignat, Puy de Dôme. In Italy, from Capo di Bove, near Rome, Lazio; and at Aci Castello, Aci Trezza, Osilo, and other places on Sardinia. From Arendal, Tvedalen, at Brevik and elsewhere around the Langesundsfjord, Norway. At Klöch, Styria, Austria. From the Schellkopf, near Brenk, Eifel district, and in the Höwenegg quarry, Hegau, Baden-Württemberg, Germany. From Allt Ribhein, Fiskavaig Bay, Isle of Skye, Scotland. In the USA, at Crestmore, Riverside Co., California, and around Honolulu, Oahu, Hawaii. At Mazé, Niigata Prefecture, Japan. A number of other localities are known.

Name: For Ferdinand Gonnard, French mineralogist, Lyons, France, who first noted the mineral.


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