Labradorite Na$_{0.5-0.3}$Ca$_{0.5-0.7}$Al$_{1.5-1.7}$Si$_{2.5-2.3}$O$_8$

Crystal Data: Triclinic. Point Group: $\overline{1}$. Crystals typically thin, tabular along [010], and rhombic in section, to 4 cm. Cleavable, granular, or massive. Twinning: Common according to Albite, Pericline, Carlsbad, Baveno, or Manebach laws.

Physical Properties: Cleavage: Perfect on {001}, less perfect on {010}, intersecting at 90°; distinct on {110}. Fracture: Uneven to conchoidal. Tenacity: Brittle. Hardness = 6–6.5 D(meas.) = 2.68–2.72 D(calc.) = 2.685–2.710


Cell Data: Space Group: $C\overline{1}$ (low). $a = 8.1648$ $b = 12.8585$ $c = 7.0973$ $\alpha = 90°34'$ $\beta = 116°06'$ $\gamma = 89°47'$ $Z = 4$

X-ray Powder Pattern: Synthetic Na$_{0.40}$Ca$_{0.60}$Al$_{1.60}$Si$_{2.40}$O$_8$ (high).

Chemistry: (1) $\begin{array}{ccc}
\text{SiO}_2 & 52.97 & 55.59 \\
\text{Al}_2\text{O}_3 & 29.41 & 28.30 \\
\text{Fe}_2\text{O}_3 & 0.76 & \\
\text{CaO} & 12.59 & 10.38 \\
\end{array}$

(2) $\begin{array}{ccc}
\text{Na}_2\text{O} & 3.97 & 5.73 \\
\text{K}_2\text{O} & 0.26 & \\
\text{H}_2\text{O} & 0.22 & \\
\end{array}$

(3) Total $100.18$ $100.00$ $100.00$

(1) San Marcos Mountains, California, USA. (2) Na$_{0.50}$Ca$_{0.50}$Al$_{1.50}$Si$_{2.50}$O$_8$.

Polymorphism & Series: High- and low-temperature structural varieties are recognized.

Mineral Group: Feldspar group, plagioclase series.

Occurrence: In mafic igneous rocks and anorthosites. Rarer in metamorphic rocks, as amphibolites. As detrital grains in sedimentary rocks.

Association: Olivine, pyroxenes, amphiboles, magnetite.

Distribution: Widespread. From Ford Harbour, Pauls Island, Labrador, Newfoundland; at Lake St. John, Quebec; and elsewhere in Canada. In the USA, especially in northern New York, forming the Adirondack Mountains; crystals from Sagebrush Flat, about 37 km north of Plush, Lake Co., Oregon; atop the San Marcos Mountains, San Diego Co., and in the western San Gabriel Mountains, Los Angeles Co., California. Abundant gem crystals in the Pinacate volcanic field, Sonora, Mexico. At Vesuvius, Campania, and on Mt. Etna, Sicily, Italy. From Ylämaa, near Lappeenranta, Finland. In the Langesundsflå- Larvik-Tvedalen area, Norway. On Surtsey Island, south of Iceland.

Name: For the type locality on Pauls Island, off the coast of Labrador, Canada.