Jeffreyite

\((\text{Ca, Na})_2(\text{Be, Al})\text{Si}_2(\text{O, OH})_7\)

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**Crystal Data:** Orthorhombic. **Point Group:** 222. As thin micaceous pseudotetragonal plates, to 1.2 mm, composed of \{001\} and \{110\}. **Twinning:** On \{100\}.

**Physical Properties:** Cleavage: Perfect on \{001\} and \{110\}. **Tenacity:** Brittle. Hardness = \(~5\). \(D(\text{meas.}) = 2.99(2)\) \(D(\text{calc.}) = 2.98\)

**Optical Properties:** Transparent. **Color:** Colorless, but commonly with a brown coating. **Optical Class:** Biaxial (-). **Orientation:** \(X = c; Y = a; Z = b\). \(\alpha = 1.625(2)\) \(\beta = 1.641(2)\) \(\gamma = 1.643(2)\) \(2\upsilon(\text{meas.}) = 40(2)^{\circ}\) \(2\upsilon(\text{calc.}) = 39^{\circ}\)

**Cell Data:** Space Group: \(C222_1\). \(a = 14.90(1)\) \(b = 14.90(1)\) \(c = 40.41(8)\) \(Z = 64\)

**X-ray Powder Pattern:** Jeffrey mine, Canada. 2.774 (100), 2.993 (90), 2.541 (60), 1.755 (50), 5.00 (40), 2.360 (40), 2.229 (40)

**Chemistry:**

| \(\text{SiO}_2\) | 46.7 |
| \(\text{Al}_2\text{O}_3\) | 2.8 |
| \(\text{BeO}\) | 8.1 |
| \(\text{CaO}\) | 37.4 |
| \(\text{Na}_2\text{O}\) | 2.3 |
| \(\text{H}_2\text{O}\) | 1.8 |

Total 99.1

(1) Jeffrey mine, Canada; by electron microprobe, average of nine analyses, Be by AA, \(\text{H}_2\text{O}\) by TGA; corresponds to \((\text{Ca}_{1.69}\text{Na}_{0.19})\Sigma=1.88(\text{Be}_{0.82}\text{Al}_{0.14})\Sigma=0.96\text{Si}_{1.97}(\text{O}_{0.49}(\text{OH})_{0.51})\Sigma=7.00\).

**Polymorphism & Series:** Dimorphous with gugiaite.

**Occurrence:** In a cavity in a highly calcium-metasomatized granite dike.

**Association:** Grossular.

**Distribution:** In the Jeffrey mine, Asbestos, Quebec, Canada.

**Name:** For the type locality, the Jeffrey mine, Quebec, Canada.

**Type Material:** Canadian Museum of Nature, Ottawa, Canada, 48740.