Gladiusite  \((\text{Fe}^{2+}, \text{Mg})_4\text{Fe}_2^{3+}(\text{PO}_4)(\text{OH})_{11}\cdot\text{H}_2\text{O})\)

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Physical Properties:  Hardness = \(\sim 5\)  \(D(\text{meas.}) = 2.23-2.40\)  \(D(\text{calc.}) = \text{n.d.}\)

Optical Properties:  Semitransparent.  Color:  White to yellow.  Optical Class:  n.d.  Orientation:  Elongation positive, extinction parallel.  \(\alpha = 1.547\)  \(\beta = \text{n.d.}\)  \(\gamma = 1.571\)  \(2\text{V}(\text{meas.}) = \text{n.d.}\)

Cell Data:  Space Group:  n.d.  \(Z = \text{n.d.}\)

X-ray Powder Pattern:  Boevskoye deposit, Russia.  \(11.0\ (10), 2.42\ (9), 3.17\ (8), 1.957\ (8), 1.395\ (8), 4.06\ (6), 2.68\ (6b)\)

Chemistry:

\[
\begin{array}{ccc}
\text{P}_2\text{O}_5 & 36.99 & 34.02 & 41.37 \\
\text{CO}_2 & 1.88 & 2.14 & \\
\text{SiO}_2 & 0.00 & 0.95 & \\
\text{Al}_2\text{O}_3 & 0.95 & 0.00 & \\
\text{Fe}_2\text{O}_3 & 0.00 & 0.60 & \\
\text{BeO} & 28.97 & 29.46 & 29.16 \\
\text{MgO} & 0.00 & \text{trace} & \\
\text{CaO} & 14.11 & 12.72 & 16.34 \\
\text{F} & 0.00 & 0.12 & \\
\text{H}_2\text{O} & 13.70 & 13.70 & 13.13 \\
\text{insol} & 2.90 & \text{n.d.} & \\
\end{array}
\]

Total  99.50  100.00

(1) Boevskoye deposit, Russia; corresponds to \(\text{Ca}_{0.86}\text{Be}_{3.94}(\text{PO}_4)_{1.79}(\text{CO}_3)_{0.15}\)
(2) \(\text{Fe}_2\text{O}_3\) considered to be “limonite”; corresponds to \(\text{Ca}_{0.84}\text{Be}_{1.28}(\text{PO}_4)_{1.76}(\text{CO}_3)_{0.18}(\text{SiO}_4)_{0.06}\text{Σ}=2.00(\text{OH})_{4.34}\text{F}_{0.02}\text{Σ}=4.36\times0.62\text{H}_2\text{O}.
(3) \(\text{CaBe}_4(\text{PO}_4)_2(\text{OH})_4\cdot0.5\text{H}_2\text{O}\).

Occurrence:  As segregations in mica-fluorite greisen in illite rocks (Boevskoye deposit, Russia).

Association:  Moraesite, fluorite, rutile, “limonite”, quartz, mica-clay minerals (Boevskoye deposit, Russia); mitridatite, moraesite, siderite, tourmaline, albite (Paris, Maine, USA).


Name:  From the Latin glucinium, beryllium, for its content of that element.

Type Material:  Il’menskii Preserve Museum, Miass, 11344vr; Mining Institute, St. Petersburg, 118/1; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 65901, 65902.