Mineralogical Society of America Handbook of Mineralogy Revised 3/28/2017

Césarferreiraite

**Fe**

**2**\(^{2+}\)**Fe**

**3**\(^{3+}\)**2(AsO**4**\(^{4-}\))**2(OH)**\(^{2-}\)**2\(\cdot\)8H\(^2\)O

**Crystal Data:** Triclinic.  **Point Group:** 1.  Crystals, to 10 \(\mu\)m, are elongated along [001] and flattened on (100). Also as fibers with rectangular cross-section apparently bound by \{100\} and \{010\}. Typically in random sprays or aggregates.

**Physical Properties:**  **Cleavage:** Distinct on \{010\} and \{100\}.  **Fracture:** Uneven.  **Tenacity:** Brittle.  
Hardness = n.d. (easily crushed between two glass slides.)  
D(meas.) = n.d.  
D(calc.) = 2.934

**Optical Properties:**  **Transparent.**  **Color:** Pale to greenish yellow.  **Streak:** Pale to greenish yellow.  **Luster:** Vitreous.  **Optical Class:** Biaxial (+).  
\(\alpha = 1.747(3)\)  
\(\beta = \text{n.d.}\)  
\(\gamma = 1.754(3)\)  
2V(meas.) = n.d.  
2V(calc.) = n.d.

**Cell Data:**  **Space Group:** \(P\bar{1}\).  
\(a = 5.383(2)\)  
\(b = 10.363(3)\)  
\(c = 6.878(2)\)  
\(\alpha = 96.42(4)^\circ\)  
\(\beta = 109.19(3)^\circ\)  
\(\gamma = 102.30(2)^\circ\)  
Z = 1

**X-ray Powder Pattern:** Eduardo pegmatite mine, Conselheiro Pena, Minas Gerais, Brazil.  
6.35 (100), 9.85 (95), 2.960 (39), 2.884 (35), 3.158 (32), 3.671 (29), 2.680 (29)

**Chemistry:**

\[
\begin{array}{ccc}
\text{FeO} & [11.50] & 11.52 \\
\text{Fe}_2\text{O}_3 & [25.56] & 25.61 \\
\text{P}_2\text{O}_5 & 3.54 & \\
\text{As}_2\text{O}_5 & 33.51 & 36.86 \\
\text{H}_2\text{O} & [26.01] & 26.01 \\
\text{Total} & 100.12 & 100.00
\end{array}
\]

(1) Eduardo pegmatite mine, Minas Gerais, Brazil; average of 4 electron microprobe analyses supplemented by IR spectroscopy, FeO:Fe\(_2\)O\(_3\) calculated by analogy to laueite group minerals, H\(_2\)O calculated from stoichiometry; corresponds to Fe\(^{2+}\)\(_{0.96}\)Fe\(^{3+}\)\(_{1.79}\)(AsO\(_4\))\(_2\)(PO\(_4\))\(_{0.31}\)(OH)\(_{1.52}\)\(\cdot\)8H\(_2\)O.

(2) Fe\(^{2+}\)Fe\(^{3+}\)_2(AsO\(_4\))\(_2\)(OH)\(_2\)\(\cdot\)8H\(_2\)O.

**Mineral Group:** Laueite group.

**Occurrence:** Filling a miarolitic cavity in a zoned granitic pegmatite, likely replacing arsenopyrite.

**Association:** Pharmacosiderite, scorodite, arsenopyrite.

**Distribution:** From the Eduardo pegmatite mine, near Boa Vista creek, Conselheiro Pena municipality, Minas Gerais, Brazil.

**Name:** Honors César Mendonça Ferreira (b. 1942), Professor of Mineralogy and Gemology and founder of the Gemological Laboratory of the Federal University of Ouro Preto, Brazil.

**Type Material:** Museum of Science and Technology, School of Mines, Federal University of Ouro Preto, Minas Gerais, Brazil (SAA-011).