

**Fraipontite**

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**Crystal Data:** Monoclinic. *Point Group:* n.d. Fibrous to porcelaneous massive.**Physical Properties:** Hardness = 3.5–4 D(meas.) = 3.08–3.10 D(calc.) = 3.44–3.54**Optical Properties:** Opaque to translucent. *Color:* Yellowish white to bluish. *Streak:* White to pale green. *Luster:* Silky.*Optical Class:* Biaxial (-).  $n = 1.61\text{--}1.62$   $2V(\text{meas.}) = 15^\circ\text{--}20^\circ$ **Cell Data:** *Space Group:* n.d.  $a = 5.372$   $b = 9.246$   $c = 7.273$   $\beta = 103^\circ 33'$   $Z = 2$ **X-ray Powder Pattern:** Vieille-Montagne, Belgium.

7.03 (100), 3.53 (70), 2.650 (40), 2.490 (30), 2.385 (30), 1.540 (30), 4.60 (20)

**Chemistry:**

	(1)	(2)	(3)
SiO <sub>2</sub>	20.86	24.8	32.78
Al <sub>2</sub> O <sub>3</sub>	16.62	17.3	21.71
Fe <sub>2</sub> O <sub>3</sub>	0.52		
CuO	0.50	5.2	16.80
ZnO	47.04	40.95	14.50
MgO	0.07		0.24
CaO	0.35	0.34	0.37
K <sub>2</sub> O			0.08
H <sub>2</sub> O <sup>+</sup>	13.13	[12.8]	[13.52]
H <sub>2</sub> O <sup>-</sup>	1.13		
Total	100.22	[101.39]	[100.00]

(1) Vieille-Montagne, Belgium; corresponds to  $(\text{Zn}_{2.29}\text{Al}_{0.66}\text{Cu}_{0.03}\text{Mg}_{0.01})_{\Sigma=2.99}(\text{Si}_{1.37}\text{Al}_{0.63})_{\Sigma=2.00}\text{O}_5(\text{OH})_{4.01}$ . (2) Silver Bill mine, Arizona, USA; by electron microprobe, H<sub>2</sub>O by loss on ignition; corresponds to  $(\text{Zn}_{1.84}\text{Al}_{0.77}\text{Cu}_{0.24})_{\Sigma=2.85}(\text{Si}_{1.51}\text{Al}_{0.49})_{\Sigma=2.00}\text{O}_5(\text{OH})_4$ . (3) Mohawk mine, California, USA; H<sub>2</sub>O by difference, corresponds to  $(\text{Al}_{1.18}\text{Cu}_{0.69}\text{Zn}_{0.58})_{\Sigma=2.45}(\text{Si}_{1.79}\text{Al}_{0.21})_{\Sigma=2.00}\text{O}_5(\text{OH})_4$ .

**Mineral Group:** Kaolinite-serpentine group.**Occurrence:** In oxidized zinc-bearing mineral deposits.**Association:** Smithsonite (Vieille-Montagne, Belgium); gebhardtite, willemite, cerussite (Tsumeb, Namibia); saucnite (Silver Bill mine, Arizona, USA).**Distribution:** Original locality not known with certainty, but thought to be one of the mines of Vieille-Montagne (Altenberg), near Moresnet, Belgium. From Tsumeb, Namibia. At Laurium, Greece. From the Copperthwaite vein, Swaledale, North Yorkshire, England. In the USA, in the Silver Bill mine, Gleeson, Cochise Co., Arizona; the Blanchard mine, Socorro Co., New Mexico; and the Mohawk mine, San Bernardino Co., California. From the Ojuela mine, Mapimí, Durango, Mexico.**Name:** To honor Julien Jean Joseph Fraipont (1857–1910), and Charles Fraipont, of Liège, Belgium, both geologists and paleontologists.**Type Material:** University of Liège, Liège, Belgium, 13727.**References:** (1) Cesàro, G. (1927) Sur la fraipontite, silicate basique hydraté de zinc et d'aluminum. Ann. Soc. Geol. Belgique, 50, 106–110 (in French). (2) (1928) Amer. Mineral., 13, 492 (abs. ref. 1). (3) Fransolet, A.-M. and P. Bourguignon (1975) Données nouvelles sur la fraipontite de Moresnet (Belgique). Bull. Soc. fr. Minéral., 98, 235–244 (in French with English abs.). (4) (1977) Amer. Mineral., 62, 175 (abs. ref. 3). (5) Foord, E.E., J.E. Taggart, and N.M. Conklin (1983) Cuprian fraipontite and saucnite from the Defiance-Silver Bill mines, Gleeson, Arizona. Mineral. Record, 14, 131–132. (6) Wise, W.S. (1990) The mineralogy of the Mohawk mine, San Bernardino Co., California. San Bernardino Co. Mus. Assoc. Quarterly, 37(1), 31 pp.

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