Plombièrite $Ca_5H_2Si_6O_{18}\cdot 6H_2O(?)$

Crystal Data: Orthorhombic; typically amorphous. *Point Group:* n.d. A hardened gel; powdery, compact, massive.

Physical Properties: *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = ~4
D(meas.) = 2.02–2.20 D(calc.) = [2.27]

Optical Properties: Transparent to translucent. *Color:* White, pink to red-brown.
Optical Class: Biaxial (+) (relic). n = 1.50–1.55 2V(meas.) = n.d.

Cell Data: *Space Group:* n.d. a = 11.24 b = 7.30 c = 28.0 Z = [4]

X-ray Powder Pattern: Ballycraigy, Ireland.
3.17 (msb), 3.01 (msb), 2.81 (ms), 1.83 (ms), 5.48 (wb), 2.07 (w), 1.67 (w)

Chemistry:

	(1)	(2)	(3)	(4)
SiO_2	40.6	40.4	41.43	47.00
Al_2O_3	1.3	2.4		
Fe_2O_3		0.8		
MgO		0.3		
CaO	34.1	32.6	32.94	36.56
H_2O	23.2	23.3	[25.63]	16.44
Total	99.2	99.8	[100.00]	100.00

(1) Plombières, France. (2) Ballycraigy, Ireland. (3) Hatrurim Formation, Israel; by electron microprobe, H_2O by difference. (4) $Ca_5H_2Si_6O_{18}\cdot 6H_2O$.

Occurrence: A gelatinous substance which hardens in air, formed from thermal waters (Plombières, France); a natural gel formed from hydration of bredigite and larnite at a diabase-chalk contact (Ballycraigy, Ireland).

Association: Zeolites (Plombières, France).

Distribution: From Plombières, Vosges, and from Boisséjour, near Ceyrat, Puy-de-Dôme, France. At Ballycraigy and Scawt Hill, near Larne, and Carneal, Co. Antrim, Ireland. From Klöch, Styria, Austria. In the Hatrurim Formation, Israel. In the USA, at Crestmore, Riverside Co., California. At Fuka, near Bicchu, Okayama Prefecture, Japan.

Name: For the French locality at Plombières.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 570.
(2) McConnell, J.D.C. (1954) The hydrated calcium silicates riversideite, tobermorite, and plombierite. Mineral. Mag., 30, 293–305. (3) McConnell, J.D.C. (1955) The hydration of larnite ($\beta-Ca_2SiO_4$) and bredigite ($\alpha_1-Ca_2SiO_4$) and the properties of the resulting gelatinous mineral plombierite. Mineral. Mag., 30, 672–680. (4) Heller, L. and H.F.W. Taylor (1956) Crystallographic data for the calcium silicates. H.M. Stationary Office, London, 32–34. (5) Gross, S. (1977) The mineralogy of the Hatrurim Formation, Israel. Geol. Sur. Israel Bull. 70, 47.