## Brassite $Mg(AsO_3OH)\cdot 4H_2O$



**Crystal Data:** Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Cryptocrystalline crusts and powder, intermixed with other arsenates.

**Physical Properties:** Hardness = n.d. D(meas.) = 2.28(4) D(calc.) = 2.326

**Optical Properties:** Semitransparent. *Color:* White. *Luster:* Pearly.
*Optical Class:* Biaxial (+) (synthetic). *Orientation:* $X = b$; $Y = a$; $Z = c$. $\alpha = 1.531(2)$ $\beta = 1.546(2)$ $\gamma = 1.562(2)$ 2V(meas.) = n.d. 2V(calc.) = 80°

**Cell Data:** *Space Group: Pbca* (synthetic). $a = 7.472(1)$ $b = 10.891(1)$ $c = 16.585(5)$ Z = 8

**X-ray Powder Pattern:** Jáchymov, Czech Republic.
4.97 (10), 3.20 (8), 3.07 (7), 4.14 (6), 3.88 (5), 2.324 (5), 4.54 (4)

**Chemistry:**

| | (1) | (2) |
|---|---|---|
| $As_2O_5$ | 48.1 | 48.63 |
| MgO | 15.6 | 17.06 |
| CaO | 0.9 | |
| $H_2O$ | [35.4] | 34.31 |
| Total | [100.0] | 100.00 |

(1) Jáchymov, Czech Republic; $H_2O$ by difference, corresponds to $(Mg_{0.92}Ca_{0.04})_{\Sigma=0.96}$ $AsO_3OH\cdot 3.70H_2O$. (2) $Mg(AsO_3OH)\cdot 4H_2O$.

**Occurrence:** A rare reaction product of arsenic-rich solutions with Ca–Mg carbonates.

**Association:** Pharmacolite, picropharmacolite, weilite, haidingerite, rauenthalite, arsenic, realgar, dolomite.

**Distribution:** From Jáchymov (Joachimsthal), Czech Republic. At Bieber and Richelsdorf, Hesse, and Wittichen, Black Forest, Germany. In the Ruben mine, Kohlendorf, Nowa Ruda (Neurode), Silesia, Poland. From the Salsigne mine, 15 km north of Carcassone, Aude, France.

**Name:** Honoring Rèjane Brasse, who first synthesized the compound.

**Type Material:** National School of Mines, Paris, France, 1963.

**References:** (1) Fontan, F., M. Orliac, F. Permingeat, R. Pierrot, and R. Stahl (1973) La brassite, $MgHAsO_4\cdot 4H_2O$, une nouvelle espèce minérale. Bull. Soc. fr. Minéral., 96, 365–370 (in French with English abs.). (2) (1975) Amer. Mineral., 60, 945 (abs. ref. 1). (3) Protas, J. and R. Gindt (1976) Structure cristalline de la brassite, $MgHAsO_4\cdot 4H_2O$, produit de déshydration de la roesslérite. Acta Cryst., 32, 1460–1466 (in French with English abs.).