Massicot PbO

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Scaly, commonly earthy, as incrustations and massive.

Physical Properties: Hardness = 2 D(meas.) = n.d. D(calc.) = 9.640

Optical Properties: Translucent, transparent on thin edges. *Color:* Sulfur-yellow to orpiment-yellow, may have a reddish tint; in transmitted light, colorless to pale yellow. *Streak:* Yellow. *Luster:* Greasy to dull.
Optical Class: Biaxial (+). *Pleochroism:* Y = light sulfur-yellow; Z = deep yellow. *Dispersion:* Strong. $\alpha = 2.51$ $\beta = 2.61$ $\gamma = 2.71$ 2V(meas.) = $\sim 90°$

Cell Data: *Space Group: Pcam* (synthetic). $a = 5.4903(1)$ $b = 5.8920(1)$ $c = 4.7520(1)$ Z = 4

X-ray Powder Pattern: Synthetic.
3.068 (100), 2.946 (24), 2.745 (23), 2.3767 (17), 1.7232 (16), 1.6401 (15), 2.0078 (13)

Chemistry: Analyses of natural material are not available; identification is through correspondence of other properties with synthetic material.

Occurrence: As an oxidation product of galena, bournonite, boulangerite, and other lead-bearing minerals.

Association: Cerussite, litharge, minium, wulfenite, antimony oxides, "limonite".

Distribution: Although widespread, typically only in minor amounts. Localities for representative material include: in Germany, from Freiberg, Saxony, at Greifenstein, Nassau, and elsewhere. In France, at Malmes, Gard; Ally, Haute-Loire; in the La Gardette mine, Bourg d'Oisans, Isère; and others. At Băiţa (Rézbánya), Romania. From Laurium, Greece, in slag. At Caracoles, Bolivia. On Popocatepetl volcano, Puebla; at Carachilas, Baja California; Tornacuxtla, Hidalgo; and many other places in Mexico. In the USA, in California, from the Cerro Gordo district, Inyo Co., and on Cucamonga Peak, San Bernardino Co.; in Arizona, from the Tonopah-Belmont mine, Osborne district, at the Moon Anchor mine, Potter-Cramer property, and the Rat Tail claim, Vulture district, Maricopa Co.; in the Flux mine, Patagonia Mountains, Santa Cruz Co.; and several other places. From Dundas, Tasmania, Australia.

Name: From early Arabic, through the Spanish *mazacote* and the French for *oxide of lead*.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 516–517. (2) Hill, R.J. (1985) Refinement of the structure of orthorhombic PbO (massicot) by Rietveld analysis of neutron powder diffraction data. Acta Cryst., C41, 1281–1284. (3) McMurdie, H.F., M.C. Morris, E.H. Evans, B. Paretzkin, W. Wong-Ng, Y. Zhang, and C.R. Hubbard (1987) Standard X-ray diffraction powder patterns from the JCPDS research associateship. Powder Diffraction, 2(1), 41–56, esp. 46.