

Crystal Data: Tetragonal. *Point Group:* $4/m\ 2/m\ 2/m$. Tabular crystals, to 5 cm, flattened on {001}, with {110}, {011}, and {111} modifications, may be equant, rounded. In subparallel aggregates, rosettelike, radiating, hemispherical; lamellar, cleavable massive.

Physical Properties: *Cleavage:* {001}, perfect. *Fracture:* Uneven to subconchoidal. *Tenacity:* Brittle. Hardness = 2.5–3 D(meas.) = 7.12 D(calc.) = 7.16

Optical Properties: Transparent. *Color:* Colorless, pale yellow, amber-yellow, yellow-orange; colorless in transmitted light. *Luster:* Adamantine, pearly on {001}. *Optical Class:* Uniaxial (-); rarely biaxial due to strain. $\omega = 2.145$ $\epsilon = 2.006$ $2V(\text{meas.}) = \text{Small}$.

Cell Data: *Space Group:* $P4/nmm$ (synthetic). $a = 4.1104(2)$ $c = 7.2325(5)$ $Z = 2$

X-ray Powder Pattern: Synthetic.

3.574 (100), 2.906 (45), 3.617 (40), 2.265 (40), 2.715 (35), 1.781 (25), 2.055 (20)

Chemistry:

	(1)	(2)	(3)
Pb	79.55	78.92	79.19
F	7.11	7.25	7.26
Cl	13.44	13.57	13.55
Total	100.10	[99.74]	100.00

(1) Cromford, England. (2) Tiger, Arizona, USA; original total given as 99.67%. (3) PbFCl.

Occurrence: In the oxide zone of some lead-bearing mineral deposits.

Association: Phosgenite, anglesite, cerussite, galena, sphalerite, barite, fluorite (Cromford, England); diaboileite, boleite, caledonite, leadhillite (Tiger, Arizona, USA).

Distribution: Large crystals from the Bage and Walleclose mines, about 2.5 km south of Matlock, Derbyshire, England. In slag, at Laurium, Greece. In slag, along Baratti Beach and one km north of Campiglia, Tuscany, Italy. From the Christian-Levin mine, near Essen, North Rhine-Westphalia, Germany. Fine crystals from the Mammoth-St. Anthony mine, Tiger, Pinal Co.; in the Apache mine, Gila Co.; and the Mildren mine, Cabibi district, South Comobabi Mountains, Arizona, USA. At Chancay, Peru. From Challacollo, Tarapacá, Chile. At the Argent Pb–Zn mines, about 100 km east of Johannesburg, Transvaal, South Africa, in slag.

Name: For the first occurrence near Matlock, England.

Type Material: The Natural History Museum, London, England, 89055.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 59–60. (2) Pasero, M. and N. Perchiazzi (1996) Crystal structure refinement of matlockite. *Mineral. Mag.*, 60, 833–836. (3) (1976) NBS Mono. 25, 13, 25.