

Crystal Data: Monoclinic. *Point Group:* $2/m$. As prismatic crystals, to 0.5 mm, striated parallel to elongation.

Physical Properties: *Cleavage:* n.d. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 2.5-3 VHN = 61 (10 g load). D(meas.) = n.d. D(calc.) = 5.56

Optical Properties: Opaque. *Color:* Black; dark gray in reflected light, with weak deep-red internal reflections. *Streak:* Black. *Luster:* Metallic.

Optical Class: n.d. *Pleochroism:* Moderate, light gray to slightly greenish gray.

Anisotropism: Grayish to light blue.

R_1 - R_2 : (471.1) 35.8-40.8, (548.3) 33.7-39.0, (586.6) 32.7-37.6, (652.3) 30.4-35.1

Cell Data: *Space Group:* $P2_1/c$. $a = 8.4909(3)$ $b = 8.0227(3)$ $c = 25.3957(9)$
 $\beta = 100.382(2)^\circ$ $Z = 2$

X-ray Powder Pattern: Pollone mine, near Valdicastello Carducci, Apuan Alps, Tuscany, Italy. 2.753 (vs), 3.689 (s), 3.416 (s), 3.125 (s), 2.989 (s), 2.894 (s), 2.250 (s)

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|-------------------|--------------|
| Chemistry: | (1) |
| Ag | 3.55 |
| Tl | 0.13 |
| Pb | 41.90 |
| Sb | 17.79 |
| As | 12.41 |
| <u>S</u> | <u>22.10</u> |
| Total | 97.87 |

(1) Pollone mine, near Valdicastello Carducci, Apuan Alps, Tuscany, Italy; average of 6 electron microprobe analyses; corresponding to $\text{Ag}_{0.96}\text{Tl}_{0.02}\text{Pb}_{5.91}\text{As}_{4.84}\text{Sb}_{4.27}\text{S}_{20.14}$.

Occurrence: In a barite-pyrite-(Pb-Ag-Zn) vein deposit in a metavolcanic-metasedimentary sequence metamorphosed to greenschist facies.

Association: Barite, pyrite, sterryite, sphalerite, twinnite.

Distribution: From the Pollone mine, near Valdicastello Carducci, Apuan Alps, Tuscany, Italy.

Name: For the town, Valdicastello *Carducci*, near the mine that produced the first specimens.

Type Material: The Natural History Museum, University of Pisa, Pisa, Italy (19646).

References: (1) Biagioni, C., P. Orlandi, Y. Moëlo, and L. Bindi (2014) Lead-antimony sulfosalts from Tuscany (Italy). XVI. Carducciite, $(\text{AgSb})\text{Pb}_6(\text{As,Sb})_8\text{S}_{20}$, a new Sb-rich derivative of rathite from the Pollone mine, Valdicastello Carducci: occurrence and crystal structure. *Mineral. Mag.*, 78(7), 1775-1793. (2) (2016) *Amer. Mineral.*, 101, 1490 (abs. ref. 1).