

MinIdent-Win - pyrite

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Formula: FeS₂

Status: Mineral name is IMA approved or traditional

Level: Species

Parents: sulphides and catterite-pyrite-series

Symmetry: Cubic

Mean Atomic Number: 20.9

Diffraction Values: 1.631, 2.712, 2.425, 2.212, 1.920

Kretz abbreviation: Py

First Described in 50

Space Group: Pa-3

Z number: 4

ICDD (TM) Number: 6-710

	Minimum	Maximum	Average	Std. Dev.
a (Å)	5.405	5.420	5.413	
b (Å)	5.405	5.420	5.413	
c (Å)	5.405	5.420	5.413	
Alpha	90.000	90.000	90.000	
Beta	90.000	90.000	90.000	
Gamma	90.000	90.000	90.000	
Volume	157.902	159.220	158.570	

Colour  Opaque

Reflectivity	Minimum	Maximum	Average	Std. Dev.
470 nm	35.10	47.00	42.57	
546 nm	39.20	54.04	48.20	
589 nm	41.50	55.10	50.03	
650 nm	44.20	56.20	51.47	

	Minimum	Maximum	Average	Std. Dev.
Mohs	6.0	6.5	6.0	
Vickers	913	2315	1614	
Density	4.72	5.03	4.90	

	Total Min Wt (%)	Anal. Min Wt (%)	Average Wt (%)	Anal. Max Wt (%)	Total Max Wt (%)	Average Atomic	Coordination
O	0.0000	0.0000	0.0314	0.2823	0.2823	0.0024	
Si	0.0000	0.0000	0.0464	0.2758	0.2758	0.0020	
S	49.8200	49.8200	52.7450	53.7000	53.9812	1.9806	6
Ti	0.0000	0.0000	0.0177	0.1300	0.1300	0.0004	6
Cr	0.0000	0.0000	0.0077	0.0500	0.0500	0.0002	6
Fe	21.1500	21.1500	41.7911	47.9000	47.9000	0.9008	6
Co	0.0000	0.0000	1.3589	13.9000	13.9000	0.0278	6
Ni	0.0000	0.0000	2.0128	17.5000	17.5000	0.0413	6
Cu	0.0000	0.0000	0.7447	11.1000	11.1000	0.0141	6
As	0.0000	0.0000	0.5814	6.7500	6.7500	0.0093	6
Se	0.0000	0.0000	0.6594	6.5100	6.5100	0.0101	
Tl	0.0000	0.0000	0.0100	0.0700	0.0700	0.0001	
Total			100.0065			2.9890	

Atomic proportions calculated for S+As+Se = 2.0

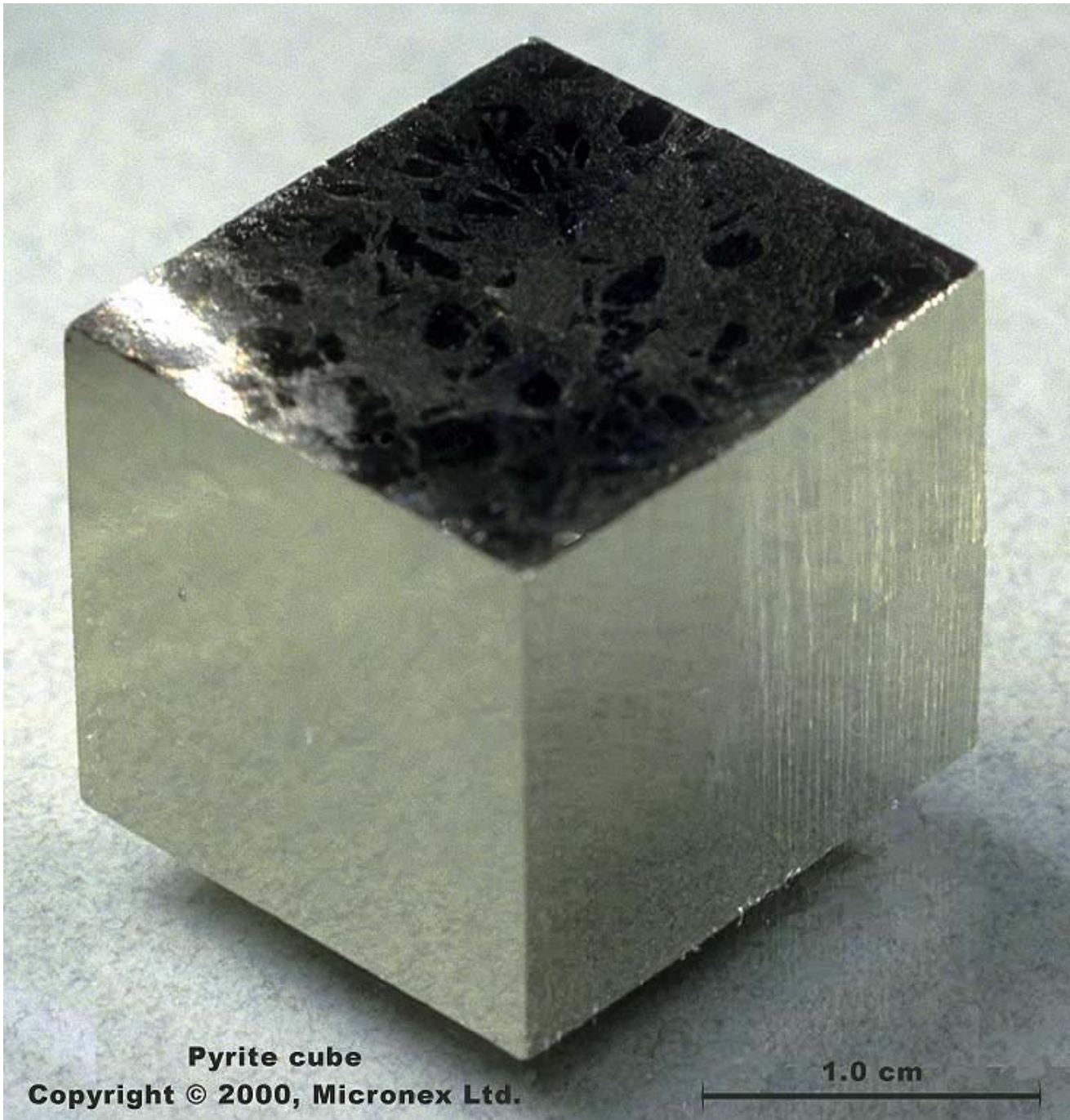
Compilation based on 9 general and 19 sample records

Values in italics are calculated from the minimum and maximum values. Other data are from the sample and general records.

Polymorphs: marcasite

MinIdent-Win

Pyrite cube



Dorian G.W. Smith

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Caption: This image shows an near perfect cube of pyrite. Nevertheless, the upper face is marked by slight differences in reflectivity that delineate growth defects with different regions within the crystal each having very slightly different orientations. Locality: Navajun, Logrono, Spain.

Keywords: pyrite; iron pyrites; cubic; cube; sulphides; metallic lustre; Navajun; Logrono; Spain

Acknowledgements: From the personal collection of Dorian Smith. Photography by Dorian Smith.

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Remarks: Pale brassy yellow, with a bright metallic lustre and sometimes an iridescent tarnish. The streak is greenish to brownish black. Pyrite is brittle with an uneven to conchoidal fracture and only very poor cleavage. Although often massive or granular, it commonly forms euhedral pyritohedra, cubes, octahedra and combinations, which characteristically have striated faces. Twinning and interpenetrant or parallel crystal intergrowths are common. In reflected light, pyrite is creamy white and isotropic.

Occurrences: Abundant and widespread in a great range of ore deposits, igneous, metamorphic and sedimentary rocks. Also occurs in meteorites (e.g. Lafayette).

Localities of samples used in compilation: Elba; Mineraria di Casall, Grosseta Province, Italy. Gladhammar, Sweden. Near Tavistock, Devon, U.K. Vathi, Kilkis, N. Greece. Jenikov, Teplice area, Ohre (Eger) graben, Bohemian massif, Czech Republic. Franklin, N.J.; Central City mine, Gilpin County Colorado, U.S.A. Mont St. Hilaire, Québec, Canada. Motoyama, Hanaoka mine, Akita Prefecture; Tutiya-Isizaki mine, Zenikamezwa village, Osima Prefecture, Hokkaido, Japan. Zapadno-Ozernoje deposit, Verkhneursalsk ore district, southern Ural Mountains, Russia.

References: EPSL v.32, p.69. Deer et al. (1962) v.5, p.128. QDF for Ore Minerals, B. M. (Nat. Hist.), 1986. Schweiz Min. Petrog. Mitt. v.68, p.67-76. Min. Mag. v.67, p.355-361. Can. Min. v.22, p.499-503; v.46, p.1159-1172. Dana (7th) v.1, p.281-290. Roberts et al. (1974) Encycl. Mins. Winchell & Winchell (1956) Elem. Opt. Min. Pt.II, p.47-48. Mandarino & Anderson (1989). Anthony et al. (1990). Uytendogaardt & Burke, 1971.