

MinIdent-Win - arsenopyrite

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Formula: FeAsS

Status: Mineral name is IMA approved or traditional

Level: Species

Parents: arsenopyrite-group

Symmetry: Monoclinic

Mean Atomic Number: 27.4

Diffraction Values: 2.667, 2.414, 2.444, 1.819, 1.630

Kretz abbreviation: Apy

First Described in 1847

Space Group: P2(1)/c

ICDD (TM) Number: 42-1320

	Minimum	Maximum	Average	Std. Dev.
a (A)	5.740	5.760	5.744	
b (A)	5.670	5.680	5.675	
c (A)	5.760	5.790	5.785	
Alpha	90.000	90.000	90.000	
Beta	110.800	112.283	112.170	
Gamma	90.000	90.000	90.000	
Volume	175.246	175.284	174.633	

C(Alpha)		Opaque
C(Beta)		Opaque
C(Gamma)		Opaque

Reflectivity	Minimum	Maximum	Average	Std. Dev.
470 nm	48.40	55.20	51.80	
546 nm	49.85	54.30	52.08	
589 nm	50.60	53.60	52.10	
650 nm	50.65	53.60	52.13	

	Minimum	Maximum	Average	Std. Dev.
Mohs	5.5	6.0	6.0	
Vickers	715	1354	1081	
Density	5.92	6.22	6.09	0.06

	Total Min Wt (%)	Anal. Min Wt (%)	Average Wt (%)	Anal. Max Wt (%)	Total Max Wt (%)	Average Atomic	Coordination
H	0.0000	0.0000	0.0131	0.2484	0.2484	0.0213	
O	0.0000	0.0000	0.1405	1.9716	1.9716	0.0144	
Si	0.0000	0.0000	0.0242	0.2337	0.2337	0.0014	
S	15.9200	15.9200	19.5729	22.6500	22.6500	1.0034	
Ca	0.0000	0.0000	0.0087	0.1572	0.1572	0.0004	
Mn	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Fe	21.4100	21.4100	32.0810	35.6300	35.6300	0.9440	6
Co	0.0000	0.0000	2.0325	11.2300	11.2300	0.0567	6
Ni	0.0000	0.0000	0.1072	0.7300	0.7300	0.0030	6
Cu	0.0000	0.0000	0.0739	1.1300	1.1300	0.0019	6
Zn	0.0000	0.0000	0.0644	0.8400	0.8400	0.0016	6
As	39.9600	39.9600	45.2757	50.6000	50.6000	0.9932	
Se	0.0000	0.2100	0.2100	0.2100	0.2100	0.0044	
Sb	0.0000	0.0000	0.1056	1.9000	1.9000	0.0014	
Ba	0.0000	0.0000	0.0056	0.1000	0.1000	0.0001	
Pb	0.0000	0.0000	0.0342	0.3300	0.3300	0.0003	
Bi	0.0000	0.0000	0.2589	4.1300	4.1300	0.0020	
Total			100.0084			3.0495	



Atomic proportions calculated for S+As+Sb+Bi = 2.0

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Compilation based on 6 general and 22 sample records

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

Lustre	Metallic
Aggregation	Massive, Compact, Columnar, Granular, Radiating, Scaly
Habit	Prismatic, Bladed, Granular
Tenacity	Brittle
Fracture	Uneven
Cleavage	{101} Distinct
Surface Colour	 Silvery White, Silver, Grey, Silvery Grey, Pale Grey
Streak	 Black, Dark Greyish Black

Comp. Plan.	Comp. Surf.	Twin Plane	Twin Axis	Notes
{100}		{100}		Simple
{001}		{001}		Simple
{101}		{101}		Contact, Repeated, Penetration

Notes on hand specimen data: The mineral sometimes exhibits a yellowish tarnish and can be confused with marcasite.

Synonyms: mispickel

Remarks: Silvery- to whitish-grey with a black streak and metallic lustre. The mineral is brittle with distinct cleavage and uneven fracture. It may form short prismatic crystals with prominent striations and a diamond-shaped cross-section, but is more commonly massive. Twinning is common. Under reflected light, the mineral appears white with weak bireflectance but strong anisotropism. When struck, arsenopyrite emits a distinct garlic odour.

Occurrences: In a wide variety of ore deposits including magmatic segregations and the pneumatolytic/pegmatitic and high to medium temperature hydrothermal environments. May also occur in contact metasomatic and in some metamorphic rocks.

Localities of samples used in compilation: Nogare, Ronchi & Calceranica, Trentino, Italy. Kappusan, Kankyonando, Korea. Asio, Totigi Prefecture, Japan. Bieber deposit, Spessart; Hohenstein, Saxony, Germany. Szadlovsky mine, Rozanyo, Hungary. Meymac, France. Modum, Norway. Hakansbø; Nordmark, Sweden. Deloro, Hastings County; O'Brien mine, Cobalt, Ontario; Mont St. Hilaire, Québec; Evening Star mine, west Kootenay district, British Columbia; Great Bear Lake, NWT, Canada. Franklin, New Jersey; Haynes-stellite mine, Blackbird district, Idaho, U.S.A.

References: Amer. Min. v.46, p.1148. Min. Mag. v.66, p.385-407. Dana (7th) v.1, p.316-322. QDF for Ore Minerals, B. M. (Nat. Hist.), 1986. Can. J. Earth Sci. v.23, p.1470-1479. Mandarino & Anderson (1989). Anthony et al. (1990). Roberts et al. (1974) Encycl. Mins. Uytendogaardt & Burke (1971).

MinIdent-Win

Arsenopyrite



Arsenopyrite. Copyright © 2000, Micronex Ltd.

2.0 cm

Dorian G.W. Smith

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Caption: A group of somewhat intergrown arsenopyrite crystals, each of which is formed by a combination of heavily striated {210} faces terminated by {011} dome faces. The silvery colour distinguishes this mineral from marcasite which may otherwise have a very similar appearance. Locality: San Antonio el Grande, Chihuahua, Mexico.

Keywords: arsenopyrite; sulphides; mispickel; misspickel; metallic lustre; cockscomb habit; San Antonio el Grande; Chihuahua; Mexico

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