MinIdent-Win - hematite

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Formula: Fe_2O_3
Status: Mineral name is IMA approved or traditional
Kretz abbreviation: Hem
Level: Species
Parents: hematite-group
Symmetry: Trigonal
Space Group: R-3c
Mean Atomic Number: 20.3
Z number: 6
Diffraction Values: 2.696, 2.519, 1.692, 1.842, 3.680
ICDD (TM) Number: 33-664

	Minimum	Maximum	Average	Std. Dev.
a (A)	5.029	5.035	5.032	
b (A)	5.029	5.035	5.032	
c (A)	13.730	13.749	13.740	
Alpha	90.000	90.000	90.000	
Beta	90.000	90.000	90.000	
Gamma	120.000	120.000	120.000	
Volume	300.721	301.857	301.254	

	Minimum	Maximum	Average	Std. Dev.
n(Omega)	3.150	3.220	3.185	
n(Epsilon)	2.870	2.940	2.905	
Max. birefrin	0.280	0.280	0.280	

Optical Sign: -ve

C(Omega) Brownish Red, Opaque, Internal reflections
C(Epsilon) Yellowish Red, Opaque, Internal reflections

Reflectivity	Minimum	Maximum	Average	Std. Dev.
470 nm	27.45	31.80	*29.63*	
546 nm	26.00	30.20	*28.10*	
589 nm	23.30	29.15	*26.23*	
650 nm	21.00	26.35	*23.68*	

	Minimum	Maximum	Average	Std. Dev.
Mohs	5.0	6.0	*5.5*	
Vickers	739	1114	*927*	
Density	5.00	5.31	5.29	

	Total Min Wt (%)	Anal. Min Wt (%)	Average Wt (%)	Anal. Max Wt (%)	Total Max Wt (%)	Average Atomic	Coordination
H	0.0000	0.0000	0.0323	0.1936	0.1936	0.0506	
O	29.4002	29.4002	30.3605	31.5036	31.5036	3.0000	
Na	0.0000	0.0000	0.0080	0.0668	0.0668	0.0006	6
Mg	0.0000	0.0000	0.2392	1.1820	1.1820	0.0156	6
Al	0.0000	0.0000	0.4054	5.1337	5.1337	0.0238	6
Si	0.0000	0.0000	0.0449	0.3646	0.3646	0.0025	
K	0.0000	0.0000	0.0042	0.0415	0.0415	0.0002	
Ca	0.0000	0.0000	0.0077	0.1072	0.1072	0.0003	6
Ti	0.0000	0.0000	3.0649	16.3004	16.3004	0.1012	6
V	0.0000	0.0000	0.0068	0.0408	0.0408	0.0002	6
Cr	0.0000	0.0000	0.6842	4.3242	4.3242	0.0208	6
Mn	0.0000	0.0000	0.5424	2.1375	2.1375	0.0156	6
Fe	49.2591	49.2591	64.1982	69.9157	70.6431	1.8173	6
Zn	0.0000	0.0000	0.0562	0.2972	0.2972	0.0014	6
Zr	0.0000	0.0000	0.0082	0.0370	0.0370	0.0001	6
Nb	0.0000	0.0000	0.0210	0.1188	0.1188	0.0004	6

Sn	0.0000	0.0000	0.0727	1.5157	1.5157	0.0010	
Au	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	6
Total			99.7568			5.0514	

Atomic proportions calculated for O = 3.0

Compilation based on 6 general and 16 sample records
Values in italics are calculated from the minimum and maximum values. Other data are from the sample and general records.

Lustre	Metallic, Submetallic, Adamantine, Vitreous, Dull, Earthy
Aggregation	Reniform, Radiating, Massive, Colloform, Stalactitic, Concretionary, Oolitic, Lamellar, Botryoidal, Granular, Rosettes, Foliaceous, Scaly
Habit	Tabular, Platy, Rhombohedral, Octahedral
Tenacity	Brittle, Flexible
Fracture	Subconchoidal, Uneven
Cleavage	None
Surface Colour	Reddish Brown, Dark Reddish Brown, Dark Grey, Greyish Black, Black
Streak	Pale Red, Red, Dark Red, Brownish Red, Reddish Brown
Other lumin.	Cathodoluminescent: Red

Comp. Plan.	Comp. Surf.	Twin Plane	Twin Axis	Notes
{10-10}		{0001}		Penetration
		{10-11}		Penetration

Polymorphs: maghemite

Synonyms: haematite, hamatit, oligiste, raphisiderite, titanohematite, titanohaematite

Remarks: Crystals are grey to black with a metallic lustre and are sometimes iridescent. Massive hematite is usually brownish-red - as is the streak. Hematite is brittle with an uneven to subconchoidal fracture and no cleavage. Well-formed crystals are generally tabular or platy rhombohedra. Less well crystallised samples may occur as reniform masses ("kidney ore") or as oolitic or concretionary bodies. Hematite is one of the most important ores of Fe.

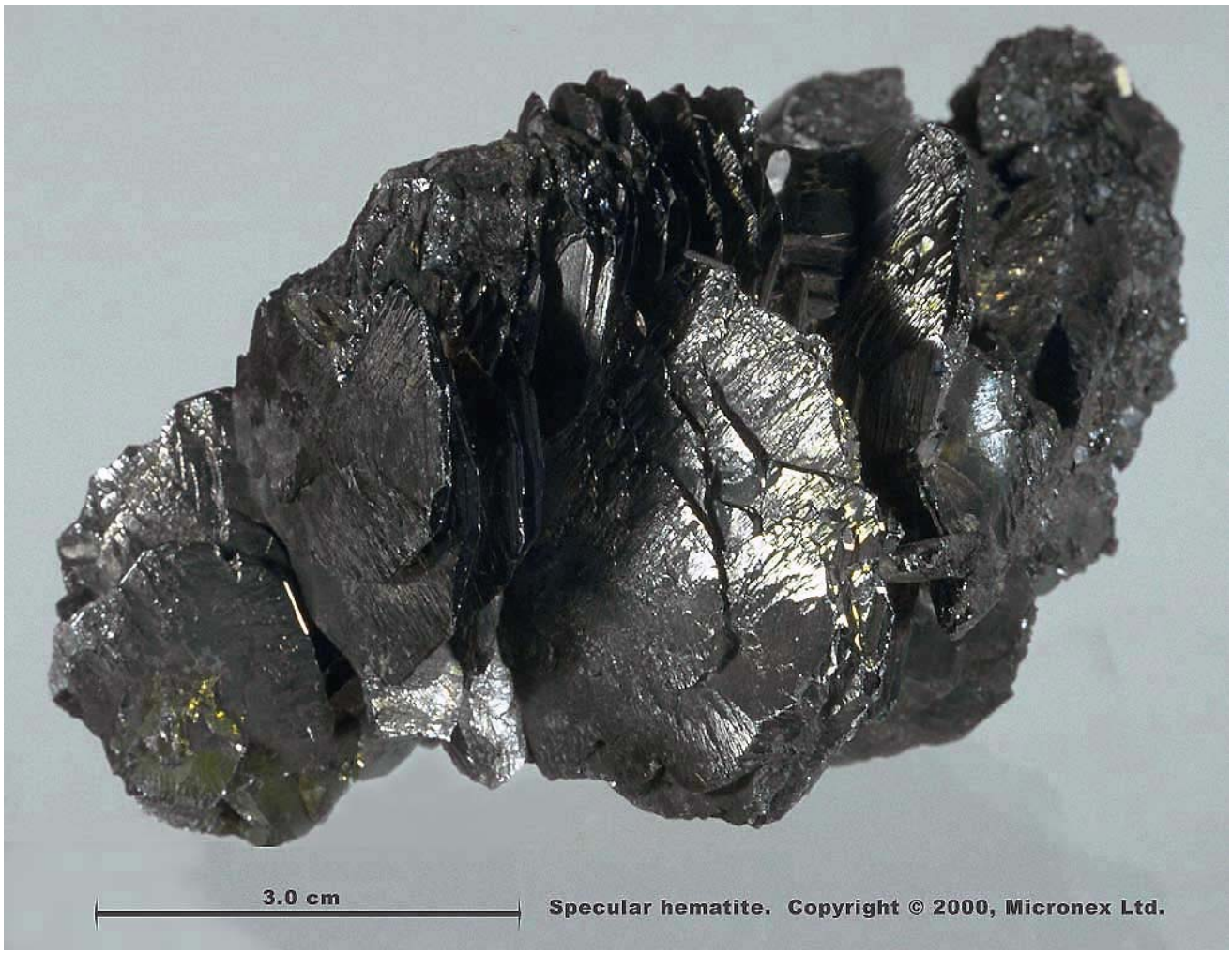
Occurrences: Most abundant iron ore. In thick sedimentary beds. Accessory in igneous rocks. In vein deposits. As gossan. Sublimation product in lavas. In metamorphic rocks. In decomposed hypersthene-augite andesite. Inside limonite nodules. In a buchite produced by a coal seam fire.

Localities of samples used in compilation: Bernece, Borzsony Mountains, Czechoslovakia. Rietana, Etna, Sicily; Elba, Italy. Katzenbuckel, Odenwald, Germany. Inglehope, Western Australia, Australia. Cauê & Gongo Soco, Itabira, Minas Gerais, Brazil. Franklin, New Jersey; Healy coal seam, near Buffalo, Wyoming, U.S.A. Canadian Creek, Yukon Territory, Canada.

References: Amer. Min. v.72, p.137-147. Can. Min. v.40, p.1609-1627; v.46, p.59-72. Min. Mag. v.70, p.591-602. Deer et al. (1962) v.5, p.21-27. QDF for Ore Mins. B.M. (Nat. Hist.), 1986. Roberts et al. (1974) Encycl. Mins. USGS Bull. 1627. Uytenbogaardt & Burke (1971). Winchell & Winchell (1956) Elem. Opt. Min. Pt.II, p.62-63.

MinIdent-Win

Specular hematite



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Caption: Platy crystals of hematite are formed largely by very flat rhombohedral faces. Note that despite the fact that this is the well-crystallised specular variety of hematite, the characteristic streak (powder) colour can be seen on the right hand side where the specimen was originally broken. Locality: Rio, Isle of Elba, Italy.

Keywords: hematite; specular; specularite; Rio; Isle of Elba; Italy; iron ore; flat rhombohedra; platy habit; submetallic lustre

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