

MinIdent-Win - chromite

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Formula: $(\text{Fe}^{2+}, \text{Mg})(\text{Cr}, \text{Al})_2\text{O}_4$

Status: Mineral name is IMA approved or traditional

Level: Species

Parents: chromite-hercynite-series and chromite-magnesiochromite-series

Symmetry: Cubic

Mean Atomic Number: 18.8

Diffraction Values: 2.520, 1.600, 1.460, 2.070, 2.950

Kretz abbreviation: Chr

First Described in 1845


Space Group: Fd-3m

Z number: 8

ICDD (TM) Number: 3-873

	Minimum	Maximum	Average	Std. Dev.
a (Å)	8.266	8.378	8.266	
b (Å)	8.266	8.378	8.266	
c (Å)	8.266	8.378	8.266	
Alpha	90.000	90.000	90.000	
Beta	90.000	90.000	90.000	
Gamma	90.000	90.000	90.000	
Volume	564.789	588.059	564.789	

	Minimum	Maximum	Average	Std. Dev.
n	2.080	2.160	2.120	

Colour  Brown, Opaque, Internal reflections

Reflectivity	Minimum	Maximum	Average	Std. Dev.
470 nm	12.80	13.90	13.90	
546 nm	12.30	13.50	13.50	
589 nm	12.10	13.30	13.30	
650 nm	11.90	13.10	13.10	

	Minimum	Maximum	Average	Std. Dev.
Mohs	5.5	6.0	6.0	
Vickers	1036	2000	1518	
Density	4.50	5.09	4.80	

	Total Min Wt (%)	Anal. Min Wt (%)	Average Wt (%)	Anal. Max Wt (%)	Total Max Wt (%)	Average Atomic	Coordination
H	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
O	26.5703	26.5703	30.7516	39.9609	39.9609	4.0000	
Na	0.0000	0.0000	0.0056	0.0223	0.0223	0.0005	
Mg	0.0000	0.2473	2.7505	6.2479	6.6399	0.2355	4
Al	0.0000	0.0159	4.8723	12.6750	14.7383	0.3758	6
Si	0.0000	0.0000	0.0253	0.2800	0.2800	0.0019	4
P	0.0000	0.0087	0.0087	0.0087	0.0087	0.0006	
K	0.0000	0.0166	0.0166	0.0166	0.0166	0.0009	
Ca	0.0000	0.0000	0.0233	0.2001	0.2001	0.0012	
Sc	0.0000	0.0000	0.0015	0.0196	0.0196	0.0001	
Ti	0.0000	0.0000	0.6034	2.0323	2.0323	0.0262	6
V	0.0000	0.0000	0.5021	7.5791	7.5791	0.0205	
Cr	22.9347	22.9347	34.2164	48.1274	49.9808	1.3694	6
Mn	0.0000	0.1394	0.8423	3.9497	3.9497	0.0319	6
Fe	9.9963	9.9963	24.2873	43.0660	43.0660	0.9050	4 6
Co	0.0000	0.0000	0.0203	0.1494	0.1494	0.0007	4
Ni	0.0000	0.0000	0.0902	0.5108	0.5108	0.0032	4
Zn	0.0000	0.0000	0.9874	6.2181	6.2181	0.0314	4
Pb	0.0000	0.0000	0.0100	0.1300	0.1300	0.0001	

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Total 100.0149 7.0050

Atomic proportions calculated for O = 4.0

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, Submetallic
Aggregation	Massive, Granular, Compact
Habit	Octahedral, Granular
Tenacity	Brittle
Fracture	Conchoidal, Subconchoidal, Uneven
Cleavage	None
Surface Colour	 Black, Brownish Black
Streak	 Dark Brown

Comp. Plan.	Comp. Surf.	Twin Plane	Twin Axis	Notes
{111}		{111}		Contact, Simple, Repeated, Cyclic

Remarks: Crystals are black with a submetallic lustre. The streak is brown to dark brown. Octahedra or occasionally cube-octahedra occur, but the mineral is more commonly massive, granular or disseminated in anhedral grains. It is brittle with no cleavage and an uneven to subconchoidal fracture. Chromite forms a solid solution series with magnesiochromite and at least partial series with many other minerals of the spinel group. Chromite is the principal ore of Cr.

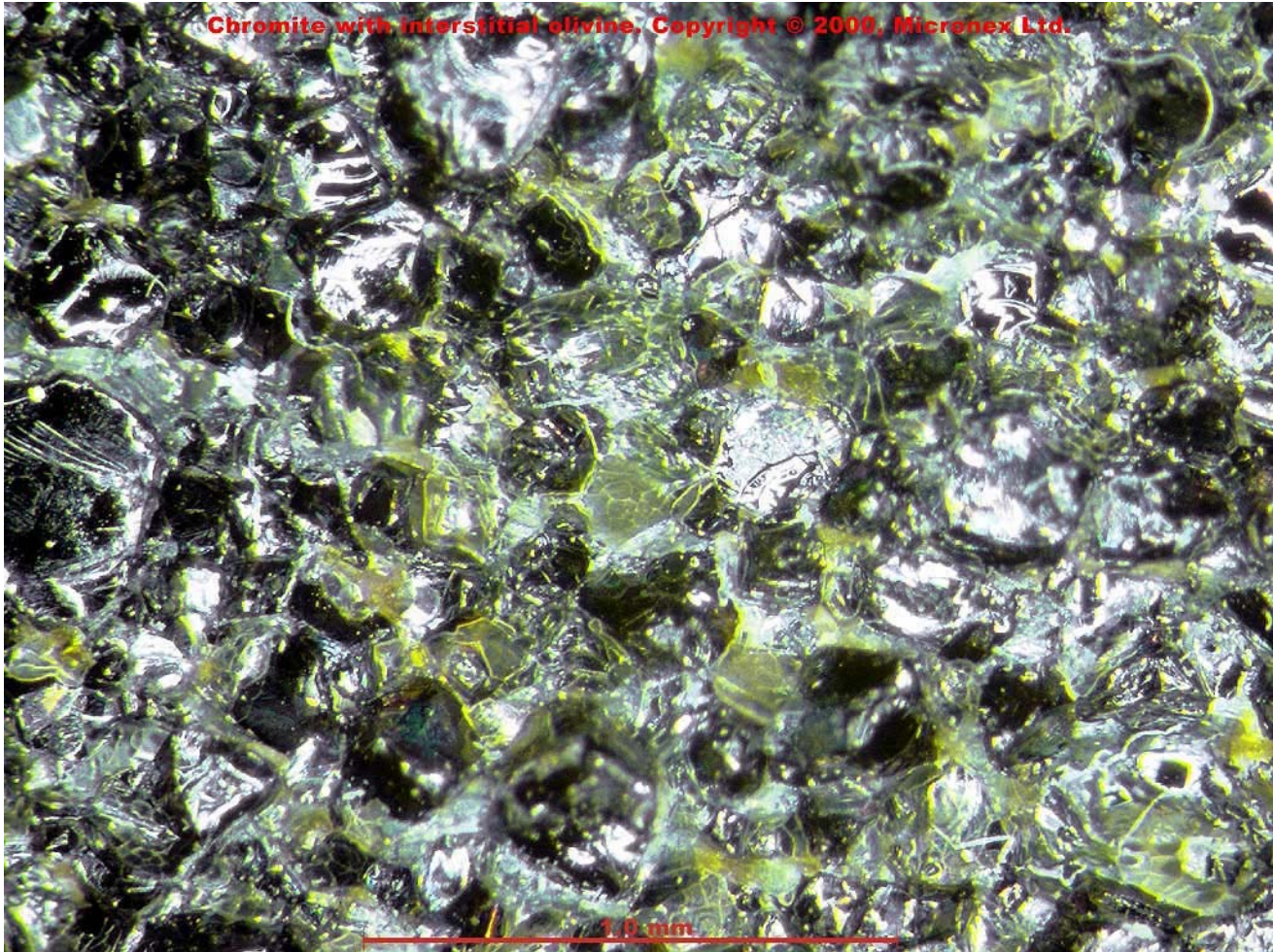
Occurrences: In a wide range of basic and ultrabasic igneous rocks and in bands in layered intrusions. Also in serpentinites. Commonly associated with olivine or its alteration products. In a wide range of meteorites, particularly chondrites of the H, L and LL groups.

Localities of samples used in compilation: Nye and Mountain view lake areas, Stillwater, Montana; Red Mountain, Alaska, U.S.A. Kapitanov deposit, Ukraine. Outokumpu district, Karelia; Naataniemi massif, Finland. St. Miguel deposit, Prades Mountains, Poblet area, southwestern Catalonia, Spain. Udachnaya West pipe, Russia. Kolhan Government Estate, Singbhum district, Bihar, India. Wadi Ghadir area, Eastern Desert, Egypt. And Paragould (L5) Lua (L5); Krymka (L3); Khohar (L3); Prairies Dog Creek; Innisfree (LL5), chondritic and Sombereite, (ungrouped iron) meteorites.

References: Can. Min. v.18, p.433; v.33, p.537; v.39, p.591-606; v.41, p.561-579. GCA v.31, p.1569. NJMA v.183, p. 283-296. Deer et al. (1962) v.5, p.78. Dokl. Akad. Nauk SSSR, v.247, p.168. J. Petrol v.28, p.867-886. Meteoritics Planetary Sci. v.41,(11), p.1797-1831. Deer et al. (1962) v.5, p.78. QDF for Ore Minerals, B. M. (Nat. Hist.), 1986. Uytendogaardt & Burke (1971). USGS Bull. 1627. Roberts et al. (1974) Encycl. Mins.

MinIdent-Win

Chromite with interstitial olivine



Dorian G.W. Smith

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Caption: This image shows a granular mass of chromite (black) with interstitial olivine (green). This specimen has probably come from a magmatic segregation deposit, and has likely formed by gravity differentiation in a layered basic igneous intrusion. The chromite shows its conchoidal to subconchoidal fracture very clearly. Locality: Uncertain.

Keywords: chromite; oxides; forsterite; nesosilicates; olivine-series; chromium ore; locality uncertain; conchoidal fracture

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