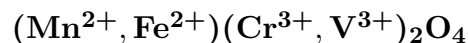


Manganochromite



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Crystal Data: Cubic. *Point Group:* $4/m\bar{3}2/m$. As six-sided grains, to 10 μm .

Physical Properties: Hardness = n.d. VHN = 1000(70) (100 g load). D(meas.) = n.d.
D(calc.) = 4.86–4.90

Optical Properties: Semitransparent. *Color:* Brownish gray in reflected light.
Optical Class: Isotropic.

R: (470) 16.8, (546) 16.5, (589) 16.5, (650) 16.3

Cell Data: *Space Group:* $Fd\bar{3}m$. $a = 8.47$ $Z = 8$

X-ray Powder Pattern: Nairne deposit, South Australia.
2.55 (s), 1.63 (s), 1.50 (s), 4.89 (w), 2.99 (w), 2.44 (w), 1.73 (w)

Chemistry:

| | (1) | (2) |
|--------------------------------|--------|------|
| TiO ₂ | | 0.2 |
| V ₂ O ₃ | 1.7 | 30.5 |
| Cr ₂ O ₃ | 62.3 | 35.9 |
| FeO | 9.4 | 5.3 |
| MnO | 24.0 | 26.3 |
| ZnO | 1.7 | 0.7 |
| Total | [99.1] | 98.9 |

(1) Nairne deposit, South Australia; original total given as 99.0%; corresponds to $(\text{Mn}_{0.77}\text{Fe}_{0.30}\text{Zn}_{0.05})_{\Sigma=1.12}(\text{Cr}_{1.88}\text{V}_{0.04})_{\Sigma=1.92}\text{O}_4$. (2) Sätra mine, Sweden; by electron microprobe, total Fe as FeO; corresponds to $(\text{Mn}_{0.83}\text{Fe}_{0.17}\text{Zn}_{0.02})_{\Sigma=1.02}(\text{Cr}_{1.06}\text{V}_{0.92}\text{Ti}_{0.01})_{\Sigma=1.99}\text{O}_4$.

Polymorphism & Series: Forms a series with vuorelainenite.

Mineral Group: Spinel group.

Occurrence: From an extension gash vein in a metamorphosed hydrothermal pyrite deposit (Nairne deposit, South Australia); in a metamorphosed iron sulfide deposit associated with submarine felsic volcanism (Sätra mine, Sweden); in sulfide nodules in an iron meteorite (Burkhala meteorite).

Association: Pyrrhotite, rutile, diopside (Nairne deposit, South Australia); vuorelainenite, sphalerite, alabandite (Sätra mine, Sweden); troilite, daubreelite, alabandite, zinc sulfides, olivine, pyroxene (Burkhala meteorite).

Distribution: From the Nairne deposit, near Brukunga, 47 km east of Adelaide, South Australia. In the Sätra mine, Doverstorp, Bergslagen metallic province, Sweden. Noted in the Burkhala meteorite.

Name: For MANGANese in its composition, and relation to *magnesiochromite*.

Type Material: Western Australian Museum, Perth, Australia, M.65.1991.

References: (1) Graham, J. (1978) Manganochromite, palladium antimonide, and some unusual mineral associations at the Nairne pyrite deposit, South Australia. *Amer. Mineral.*, 63, 1166–1174. (2) Zakrzewski, M.A., E.A.J. Burke, and W.J. Lustenhouwer (1982) Vuorelainenite, a new spinel, and associated minerals from the Sätra (Doverstorp) pyrite deposit, central Sweden. *Can. Mineral.*, 20, 281–290.