Hausmannite

\[ \text{Mn}^{2+}\text{Mn}^{3+}\text{O}_4 \]

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Crystal Data: Tetragonal. Point Group: 4/m 2/m 2/m. Crystals are pseudo-octahedral and striated || [100], to 7.5 cm. Commonly granular or massive. Twinning: Repeated twins on {112}, producing fivelings or lamellar intergrowths.


Optical Properties: Opaque, transparent through thin edges. Color: Dark brown to black; deep reddish brown in transmitted light; gray in reflected light, with deep blood-red to reddish brown internal reflections. Streak: Dark reddish brown. Luster: Submetallic.

Optical Class: Uniaxial (−). ω = 2.46(2) ε = 2.15(2) Anisotropism: Distinct.


Cell Data: Space Group: I4₁/amd. a = 5.765(1) c = 9.442(2) Z = 4

X-ray Powder Pattern: Synthetic. 2.487 (100), 2.768 (85), 1.5443 (50), 3.089 (40), 4.924 (30), 1.7988 (25), 1.5762 (25)

Chemistry:

\[
\begin{array}{lcc}
\text{MnO} & 91.38 & 93.01 \\
\text{MgO} & \text{trace} & \\
\text{CaO} & \text{trace} & \\
\text{BaO} & 0.26 & \\
\text{O} & 7.78 & 6.99 \\
\text{H}_2\text{O} & 0.62 & \\
\hline
\text{Total} & 100.04 & 100.00
\end{array}
\]

(1) Batesville, Arkansas, USA. (2) Mn\(^{2+}\)Mn\(^{3+}\)O\(_4\).

Occurrence: A primary mineral in hydrothermal veins. Also produced by metamorphism of manganiferous rocks.

Association: Rhodochrosite, pyrolusite, jacobsite, braunite, andradite, barite.

Distribution: Many localities, some economically important. In Germany, at Ilfeld, Harz Mountains; at Friedrichroda, Elgersburg, and Ohrenstock, near Ilmenau, Thuringia. From Langbahn, Jakobsberg, and the Harstigen mine, near Persberg, Värmland, and the Sjö mine, near Grytthytta, Orebro, Sweden. At the Tý Coch mine, Glamorgan, Wales. In the Wyndham Pit, near Egremont, Cumbria, England. In the USA, in Washington, on the Olympic Peninsula, abundant at a number of small deposits in Clallam, Jefferson, and Mason Cos.; in the Blue Jay mine, Trinity Co., California; from the Batesville district, Independence, Izard, and Stone Cos., Arkansas; in the Cannon mine, Stambaugh, Iron Co., Michigan. At the Magnet Cove mine, Hants, Nova Scotia, Canada. As fine crystals from the Miguel Burnier iron mine, near Ouro Prêto, Minas Gerais, Brazil. At the Iron Monarch quarry, Iron Knob, South Australia. Large crystals from the N’Chwaning mine, near Kuruman, Cape Province, South Africa. In the Kombat Cu–Pb–Ag mine, 49 km south of Tsumeb, Namibia.

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