



Minerals

Pyrrhotite

Fe_{1-x}S ($x=0-0.17$)

Crystallography:

Monoclinic; $2/m$ (below about 250°C). Hexagonal; $6/m3/m2/m$ for high temperature forms. Crystals rare, usually tabular to platy on $\{0001\}$. Also massive, granular.

Physical Properties:

Cleavage: None. Uneven to subconchoidal fracture; brittle.

Hardness: 4.0.

Specific Gravity: 4.58-4.65.

Luster: Metallic.

Color: Brownish-bronze; opaque.

Streak: Black.

Composition/Features:

Most pyrrhotites have a deficiency of iron with respect to sulfur. An iron sulfide rarely found as crystals, pyrrhotite must be distinguished from chalcopyrite by color and magnetism and from pyrite by color and hardness. Fusible at 3. Magnetic, but varying in intensity.

Occurrence/Use:

Commonly occurs in basic igneous rocks as disseminated grains or masses. Also found in contact metamorphic deposits and pegmatites. Often associated with chalcopyrite, pentlandite, and other nickel sulfides. Mined for its associated nickel, copper, and platinum. Also an ore of iron and source of sulfur.