Ore Mineral	
Arsenopyrite H: 5.5-6	Silver-white 1 poor cleavage Associated with silver and copper ores, galena, sphalerite, pyrite, chalcopyrite, and gold The principal source of Arsenic
Azurite H: 3.5-4	Intense azure-blue 2 cleavage at almost 90 Associated with Malachite A minor ore of Copper
Barite H: 3-3.5	Colourless, white, grey 2 cleavage planes Associated with ores of silver, lead, copper, cobalt, manganese, and antimony Chief source of Ba in chemicals, 80% used for heavy mud in mining
Bauxite H: 1-3	White, grey, yellow, red (translucent) No cleavage, fractures around pisolitic balls Alloyed with copper, manganese, zinc, nickel, silica, silver, and tin The ore of Aluminium, 85% consumed as aluminium ore
Bornite H: 3	Brownish-brown on fresh fracture Fractures Associated with chalcocite, chalcopyrite, covellite, pyrrhotite, and pyrite A copper ore

Ore Mineral (cont)	
Cassiterite H: 6-7	Brown or black 1 imperfect cleavage Associated with Stannite A principal ore of Tin
Chromite H: 5.5	Iron-black to brownish-black No cleavage Associated with peridotites and ultrabasic rocks The only ore of Chromium
Chalcopyrite H: 3.5-4	Brass-yellow No cleavage Associated with galena, sphalerite, dolomite, pyrrhotite and pentlandite An important ore of copper
Fluorite H: 4	Varies; commonly light-green, yellow, blue-green, or purple 1 perfect cleavage Associated with calcite, dolomite, gypsum, celestite, barite, quartz, galena, sphalerite, cassiterite, topaz, tourmaline, and apatite Used in the chemical industry

Ore Mineral (cont)	
Galena H: 2.5	Lead-grey 1 perfect cleavage Associated with sphalerite, pyrite, marcasite, chalcopyrite, cerussite, anglesite, dolomite, calcite, quartz, barite, and fluorite The only source of lead and an important ore of silver
Goethite H: 5-5.5	Yellowish-brown to dark brown 1 perfect cleavage Associated with weathered serpentine and iron-bearing minerals An ore of Iron
Gypsum H: 2	Colourless, white, grey 3 cleavage planes Associated with halite, anhydrite, dolomite, calcite, sulphur, pyrite and quartz Industrial use
Hematite H: 5.5-6.5	Reddish-brown to black 2 cleavage planes Associated with maghemite Most important ore of Iron for steel manufacture
Ilmenite H: 5.5-6	Iron-black No cleavage Associated with Geikelite, pyrophanite A major source of Titanium

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Ore Mineral (cont)

Magnetite H: 6	Iron-black Octahedral parting sometimes visible Associated with ulvospinel, magnesioferrite, jacobsite, maghermite, maritite An important Iron ore
Malachite H:3.5 - 4	Bright green Perfect cleavage, but rarely seen Associated with azurite, cuprite, native copper, iron oxides A minor ore of Copper
Molybd-enite H: 1-1.5	Lead-grey 1 perfect cleavage Associated with cassiterite, scheelite, wolframite, fluorite, and chalcopyrite The principal ore of molybdenum
Pentla-ndite H: 3.5-4	Yellowish-bronze 1 cleavage Associated with pyrrhotite The principal ore of nickel
Pyrite H: 6-6.5	Pale brass-yellow Conchoidal fracture Associated with chalcopyrite, sphalerite, and galena Mined for copper or gold associated with it
Pyrolusite H: 1-2	Iron-black 1 perfect Associated with veins with quartz and various metallic minerals Most important Manganese ore

Ore Mineral (cont)

Pyrrhotite H: 4	Brownish-bronze No cleavage Associated with pentlandite, chalcopyrite or other sulphides Mined for its associated nickel, copper, and platnium
Rhodonite H:5.5-6	Rose-red, pink, brown 2 perfect cleavages Associated with manganese and manganese-rich iron deposits Ornamental stone
Scheelite H: 4.5-5	White, yellow, green, brown 1 distinct cleavage Associated with cassiterite, topaz, fluorite, apatite, molybd-enite, and wolframite An ore of Tungsten
Sphalerite 3.5-4	Colourless when pure, green when almost pure 1 perfect cleavage (can be hard to see) Associated with pyrrhotite The more important ore of zinc
Stibnite H:2	Lead-grey to black 1 perfect Associated with antimony minerals, galena, cinnabar, sphalerite, barite, realgar, orpiment, and gold The chief ore of antimony

Ore Mineral (cont)

Wolframite H: 4-4.5	Dark 1 perfect cleavage Associated with cassiterite, scheelite, bismuth, quartz, pyrite, galena, sphalerite, and arsenopyrite Chief ore of Tungsten

Ore textures

Massive sulphide	Greater than 50% of the rock is of sulphide minerals. Textures include massive, banded, brecciated. Grain size varies from fine grained to coarse grained. Sulphide mineralogy is dependent upon the individual mineralising system
Cumulate textures	Primary magmatic processes when heavy minerals, crysta-llised in a magma, are able to sink to the bottom of the magma chamber and cumulate. This may lead to economic concentration of minerals
Semi-m-assive sulphides	An r ore that contains signif-icant amounts of sulphide minerals, but not exceeding 50%
Stringer ore	Developed where fluid pathways exist in an ore system. As the fluids migrate, they may deposit ore minerals and cause significant hydrot-hermal alteration of the host rock. Stringer zones are essentially the plumbing system and may contain ore grade

Ore textures (cont)

Breccia	Hydrothermal breccias are common hosts to ore. These ores form during or after brecciation of the host rock, due to tectonic forces or hydraulic pressure
Vughs and open space fillings	These textures are indicative of low temperatures where there is low lithostatic pressure and the ore system is developing at or near the Earth's surface. For this reason, open space voids may be developed
Veins	Vein hosted ore is very common in hydrothermal systems as the fluids carrying metals also carry gangue mineralogy components. Commonly, the gangue minerals precipitate with the ore minerals to form veins in the fluid pathways
Replacement ore	Replacement ores may be massive, semi-massive or disseminated, depending on the ore system. They generally show preferential replacement of one or more original components of the host rock. In some cases, ore minerals preferentially replace host rock components

Ore textures (cont)

Recrystallisation	Recrystallisation is relatively common in many ore systems where early formed ore minerals may be either remobilised or recrystallised due to later thermal or hydrothermal events. Recrystallisation textures impart metamorphic textures to the rock
Disseminated ore	Disseminated ore is one of the most common ore types. It is finely disseminated, or irregularly distributed ore mineral within a host rock. Many disseminated ore zones form the low grade periphery of a deposit. In some ore systems however, they may be the high grade zones
Supergene ore	Supergene processes occur in an oxidising environment, at or above the water table. These rocks are either the weathered product of hypogene ore, or are enriched by groundwater mobilisation then precipitation of metals to forms supergene ores. They are ores of copper, iron and lead

Ore textures (cont)

Ductile ore	At high temperatures during ore formation, ductile textures result. Rather than brittle fracturing and brecciation, replacement and mylonitic textures are developed
Greisen	Highly altered granitic rock or pegmatite at the top of an intrusive body
Pendant	Remnant of overlying country rock protruding onto a plutonic body.

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