Ilmenite  
\[ \text{Fe}^{2+}\text{TiO}_3 \]

Crystal Data: Hexagonal. Point Group: \( \text{3} \). As thick tabular crystals, with dominant base, to rhombohedral, to 25 cm. Skeletal, granular, massive; as lamellar exsolutions in hematite or magnetite. Twinning: Simple on \( \{0001\} \); lamellar on \( \{10\overline{1}1\} \).

Physical Properties: Cleavage: \( \{0001\} \) and \( \{10\overline{1}1\} \), partings. Fracture: Conchoidal to subconchoidal. Tenacity: Brittle. Hardness = 5–6 VHN = 566–698 (100 g load).


Chemistry: (1) (2)
| SiO\(_2\) | 0.02 | Cr\(_2\)O\(_3\) | 0.01 |
| TiO\(_2\) | 52.61 | FeO | 42.77 |
| Al\(_2\)O\(_3\) | 0.06 | MnO | 0.46 |
| Fe\(_2\)O\(_3\) | 2.22 | MgO | 2.30 |
| V\(_2\)O\(_3\) | 0.13 | Total | 100.58 |

(1) Marcy massif, Adirondacks, New York, USA; by electron microprobe, Fe\(^{2+}\):Fe\(^{3+}\) from charge balance; corresponds to (Fe\(^{2+}\)\(_{0.88}\)Mg\(_{0.08}\)Fe\(^{3+}\)\(_{0.04}\)Mn\(_{0.01}\)\(_2\))\(_{e=1.01}\)Ti\(_{0.98}\)O\(_3\). (2) FeTiO\(_3\).

Polymorphism & Series: Forms three series, with ecandrewsite, with geikielite, and with pyrophanite.

Mineral Group: Ilmenite group.

Occurrence: A common accessory mineral disseminated in igneous rocks, as granites, gabbros, and kimberlites; in granite pegmatites, carbonatites, and high-grade metamorphic rocks; may attain economic concentration in layered mafic intrusions and in “black sand” placer deposits.

Distribution: Widespread; well-crystallized from numerous localities. In the Vishnevy-Il’men Mountains, Southern Ural Mountains, Russia, large crystals; from the Lovezero massif, Kola Peninsula. In Norway, at Tellnes and Snarum; large crystals from Krageroand Arendal. From Binntal, Valais, Switzerland. At St. Cristophe, Bourg d’Oisans, Isère, France. In the USA, at Quincy, Norfolk Co., Massachusetts; from Litchfield, Litchfield Co., Connecticut; large crystals from the Lake Sanford area, Essex Co., New York. At Allard Lake, Quebec; Bancroft, Ontario; and elsewhere in Canada. From Arkaroola Bore, Flinders Ranges, and near Bimbowaie, South Australia.

Name: For the early-noted occurrence in the Il’men Mountains, Russia.