

GRAPHITE

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(see also hydrocarbon)

Graphite is a widespread accessory mineral in various metamorphic rocks such as slates, schists, gneisses, marbles, and iron formations. Thus, only a few of the more significant occurrences can be listed. Northern Peninsula.

Baraga County: **1.** Quarries of the Northern Graphite Company and of the Detroit Graphite Company 11 km southeast of L'Anse: One occurrence is along Plumbago Creek near the SE corner section 9, T49N, R33W; another is in the NW ¼ section 9, other pits are in N ½ section 16. Occurs as a major, fine-grained constituent (32 to 35%) of a graphitic slate. The quarries were operated intermittently until 1912. The graphite was ground for paint pigment (Brooks, 1873; Smith, 1918; Allen, 1920; Poindexter et al., 1939; Snelgrove et al., 1944; Kalliokoski, 1976). **2.** SW ¼ section 13, T49N, R34W: In slate. **3.** Ohio mines (Webster, Imperial), Imperial Heights near Michigamme with goethite, hematite, sulfides, carbonates, and grunerite (Morris, 1983). **4.** Taylor mine and nearby exposures, Alberta, with goethite, Mn-oxides, and barite (Morris, 1983). **5.** Site of former village of Hematite, SW ¼ SW ¼ section 27, T50N, R33W. Old slate dumps contain large amounts of graphite (R. Hawke, written communication, 1976). **6.** Nature trail along Sturgeon River gorge, 0.8 km west of U.S. Highway 41 (Hawke, 1976). **7.** Graphite that was mined in the county occurs in the Lower Slate unit of the Michigamme Formation, which crops out along the northern margin of the Marquette trough from Humboldt (east) to Alberta (west), a distance of nearly 50 kilometers. The strata contain from 17 to 30% graphite, and it is estimated that a 1.6 kilometer-wide zone contains 2.7 billion metric tons of graphite over the 50 km length (Peterman et al., 1987).

Dickinson County: **1.** SW ¼ section 32, T43N, R28W: Graphitic slate (James et al., 1961). **2.** Graphitic slates occur in the Hanbury Formation. Most of the graphite is microscopic in size; somewhat coarser flakes coat joints and shear surfaces (Bayley, 1904). Sections 12 and 19, T39N, R29W. **3.** NW ¼ SE ¼ section 14, T40N, T29W:

Graphitic schist near Norway truck road (Rominger, 1881).

Gogebic County: Gogebic iron range: As a constituent of siderite-chert rocks (Mann, 1953).

Iron County: **1.** The Wauseca member of the Riverton Iron Formation in the Iron River-Crystal Falls district is a graphite-pyrite slate. Graphitic slate breccia also occurs in the district (James and Dutton, 1951; James et al., 1968). **2.** SE ¼ SE ¼ section 21, T44N, R35W, 10.5 km north and 1.6 km east of Iron River: Graphite is noted as occurring in masses of "anthraxolite" (hydrocarbon) up to 30 cm or more in diameter in a black pyritic carbonaceous slate in the Michigamme Formation (Tyler et al., 1957). Similar material occurs at the Wauseca mine, Mineral Hills area. **3.** Sherwood mine, Mineral Hills: With hematite and sulfides (Morris, 1983).

Livingston County: In the Winans Lake fulgurite (q.v.) with native silicon, gold, silver, iron silicides and phosphides (q.v.), and lechatelierite (q.v.) (Essene and Fisher, 1984; Essene, 1985; E. Essene, personal communication, 1985).

Marquette County: **1.** In siderite-chert rocks of the Marquette iron range (Mann, 1953). **2.** Bessie mine: In schist. **3.** West Champion mine: In Bijiki Iron Formation. **4.** Michigamme Formation: As graphitic and pyritic slates in the Michigamme and Champion areas. **5.** In argillite at S. C. Smith mine in T45N, R25W (Brooks, 1873). **6.** Champion: As thin seams to massive chunks associated with quartz veins and pyrite at a road cut on US41 - M28 in the NW ¼ SE ¼ section 25, T48N, R30W, approximately 0.4 km east of the Peshekee River bridge (M. Basal, personal communication, 1999). **7.** Marquette Mall, approximately 2.5 km west of downtown Marquette on highway M-28: A half-meter-wide band of nearly pure graphite is exposed near the east end of the hill behind the shopping center (Duskin and Quigley, 1999).

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