

TREMOLITE



A common member of the amphibole group, and the Mg end-member of the tremolite - ferroactinolite series. Essentially, it is a metamorphic mineral of marbles and calc-silicate schists. It is rarely found as a detrital heavy mineral in sandstone (Denning, 1949). Actinolite is an intermediate dark green, Fe-bearing member of the series, and “byssolite” is a varietal name for fibrous, asbestiform tremolite. Northern Peninsula.

Dickinson County: 1. *Metronite quarry*, 4 km east-northeast of Felch, SE ¼ and SW ¼ section 28, T42N, R28W: Coarse, pale green-to-white blades several centimeters in length. Particularly strongly developed along margins of granitoid dikes in the Randville Dolomite (marble). This material has been variously called tremolite or actinolite, but its optical properties (Heinrich, 1962b) place it well within the tremolite part of the series, and qualitative energy dispersion X-ray microanalyses clearly show Ca, Mg > Fe, and Si as its major elements. Similar, but darker colored material also occurs in marble at Rian’s quarry, south of Felch. 2. *Rian’s quarry*, south of Felch: Dark green actinolite with diopside, pyrite, and chalcopyrite (Morris, 1983). 3. Central Dickinson County generally: Throughout Randville Dolomite (marble); blades up to 1 cm long are found with diopside (James et al., 1961). 4. Groveland mine: In Vulcan Iron Formation (Cumberlidge and Stone, 1964). 5. Section 32, T42N, R28W: In drill hole through fault pieces of dolomitic marble (James et al., 1961). Also in NE ¼ section 32, as fibrous radial aggregates in white marble. Similar occurrences in N ½ section 31, near central W ½ section 34, and SE and NW parts of section 33. At the last occurrence, tremolitic marble is underlain by hornblende-bearing quartzite. Along the contact of the two units are seams of dark green uralitized diopside crystals (Rominger, 1881). 6. NE ¼ section 23, T42N, R29W: In magnetite-amphibole Solberg Schist (James et al., 1961).

Gogebic County: 1. Gogebic iron range generally: In Bad River Marble (Allen and Barrett, 1915). Actinolite schists occur in the Ironwood

Formation (Van Hise and Leith, 1911). 2. A roadside exposure on County Road 206, NE ¼ section 5, T45N, R40W, about 13 km northwest of Watersmeet: As sheaves of radiating gray-green blades up to 2 cm long in marble (Cannon, 1980a, b). Tremolitic and dolomitic marble beds (probably Bad River Dolomite) are interlayered with chalcopyrite-bearing (q.v.) quartzite (probably Sunday Quartzite) stained by malachite.

Gratiot County: Near Ithaca, T10N, R2W in Michigan Basin Deep Drill Hole in the lower altered basalt unit. Chemical analyses are given by McCallister et al. (1978, Table 3); studies by Heinrich and Pollack (1978) and Stakes (1978) suggest this secondary amphibole is compositionally variable.

Houghton County: Centennial mine, Calumet: Fibrous variety (“byssolite”) with anthonyite (q.v.) (Williams, 1963b).

Iron County: Section 17, T43N, R35W: Vein cutting Badwater Greenstone contains quartz, tremolite, clinozoisite, and pink adularia (James et al., 1968).

Marquette County: 1. Marquette and Sands Quadrangles: In lower member metabasalt of Mona Schist (Gair and Thaden, 1968). 2. Humboldt open pit: In talcose schist (Hawke, 1976). 3. Washington iron mine: In actinolite-garnet schist and in banded Negaunee Iron Formation with quartz, magnetite, garnet, and chlorite (Brooks, 1873; Rominger, 1881). Forms seams of asbestiform stellate fibers, masses, and disseminated crystals. 4. Champion iron mine: Similar occurrence; also in manganese-rich quartzose shear veins cutting manganeseiferous Negaunee Iron Formation (Babcock, 1966a, b). 5. South of New England iron mine: In actinolite-magnetite schist (Brooks, 1873). 6. On crest of hill north of Lake Fairbanks: Coarsely columnar crystals found in layers up to 7 cm thick with chlorite in quartz vein cutting “diorite” (Brooks, 1873). 7. As an alteration product of clinopyroxene in the Yellow Dog Peridotite (plagioclase lherzolite), sections 11 and 12, T50N, R29W (Klasner et al., 1979). 8. Republic mine (Hawke, 1976). 9. Near Ropes gold mine: As white crystal sections to 10 cm in length with minor pyrite and calcite (A. E. Seaman Mineral Museum, specimen WAS 737).

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