

## NATROLITE



While natrolite is one of the most common zeolites globally, it occurs rather sparingly in Michigan, in a few native copper deposits, chiefly in Keweenaw County. Natrolite, together with thomsonite, is primarily restricted to amygdules and interstitial matrix in flow tops of beds overlying the Ashbed lode in both the Portage Lake Volcanics and the



Figure 104: Natrolite crystals from the Number 2 shaft, Seneca mine, Mohawk, Keweenaw County. Field of view 3.5 cm. A. E. Seaman Mineral Museum specimen No. DM 15687, Jeffrey Scovil photograph.

Copper Harbor Conglomerate (Livnat, 1983). Northern Peninsula.

**Houghton County:** 1. General: In veins with copper sulfides (chalcocite), analcime, and “adularia” (Lane, 1911). 2. *Osceola mine*: As colorless, transparent prismatic crystals to 1 cm long with etched, opaque white analcime. 3. Isle Royale mine, Houghton: As flattened, radiating white to reddish crystal aggregates to 1.5 cm on fracture surfaces of basalt. Originally identified as thomsonite, but verified as natrolite by energy dispersion X-ray spectra and X-ray diffraction analyses.

**Keweenaw County:** 1. *Copper Falls mine*: As long, slender, reddish, four-sided crystals with analcime, datolite, and “adularia” (Rominger, 1895; Butler and Burbank, 1929; Spiroff, 1938, 1964; Mihelcic, 1954). Also as pink-white radiating masses filling amygdules and resembling thomsonite (verified by X-ray diffraction and energy dispersion X-ray spectrometry). 2. *Saint*

*Clair mine*: As slender, white prismatic crystals to 3 cm. 3. *Phoenix mine*: Colorless, matted, acicular crystals to 5 mm coating fracture surfaces in basalt. 4. Top of Kearsarge flow along the shore of Lake Superior near the eastern tip of the Keweenaw Peninsula (Stoiber and Davidson, 1959; Moore and Beger, 1963). As amygdules resembling thomsonite (q.v.). 5. *Ashbed mine*. 6. *Clark mine, Copper Harbor*: As colorless microcrystals with analcime lining fracture surfaces in basalt. 7. *Seneca (Gratiot) mine*: In colorless, prismatic crystals with analcime (6, 7, Morris, 1983). 8. *Garden City mine*: Prismatic crystals with red analcime (Rominger, 1895). 9. *Allouez mine*: Red micro-crystals in cavities in conglomerate (Yedlin, 1974). 10. *Central mine*: As beige colored radiating tufts on fracture surfaces in basalt (verified by X-ray diffraction and energy dispersion X-ray spectrometry). 11. *Arnold mine*: As small, colorless-to-white prismatic crystals filling amygdules in basalt. Verified by energy dispersion X-ray spectrometry. 12. *Amygdaloid mine*: As colorless microcrystals in calcite veins. 13. *Connecticut mine*: Colorless acicular crystals to 5 mm coating fracture surfaces in altered basalt. 14. *Mohawk mine*: As colorless acicular crystals to 4 mm on fracture surfaces in basalt. 15. *Esrey Park*: As both colorless, prismatic crystals to 1 cm, and white, radial aggregates filling amygdules in basalt. 16. *Lookout Point (Thomsonite Hill), Eagle Harbor*: As pinkish white amygdule fillings resembling thomsonite (q.v.), which also is present.

**Ontonagon County:** 1. *Indiana mine*: As colorless to pale orange prismatic crystals in calcite veins (S. M. Carlson, personal communication, 2000). Verified by energy dispersion X-ray spectrometry. 2. *National mine*: As pale pink, radial aggregates on fracture surfaces in diabase. Verified by energy dispersion X-ray spectrometry.

**FROM: Robinson, G.W., 2004 Mineralogy of Michigan by E.W. Heinrich updated and revised: published by A.E. Seaman Mineral Museum, Houghton, MI, 252p.**

## UPDATE



*A polished natrolite amygdale with chlorite from Big Bay, Keweenaw County; 13 × 25 mm. Alan Cook specimen, George Robinson photograph.*

**Keweenaw County:** Some very attractive multicolored natrolite amygdules suitable for gemstones have been collected from basalt flow tops exposed along the shore of Lake Superior near the west end of Big Bay (A. Cook, personal communication, 2007). Many of these greatly resemble the more familiar “thomsonite” amygdules found near Grand Marais, Minnesota, and elsewhere in the Portage Lake Volcanics, but X-ray diffraction and energy dispersion X-ray spectrometry analyses show the predominant mineral present is natrolite, with lesser and variable amounts of mesolite, thomsonite, prehnite, and chlorite present in some samples.

**UPDATE FROM:** Robinson, G.W., and Carlson, S.M., 2013, *Mineralogy of Michigan Update*: published online by A.E. Seaman Mineral Museum, Houghton, MI, 46p.