

Aspedamite

Crystal Data: Cubic. *Point Group:* $2/m\bar{3}$. As dodecahedral crystals with cube modifications to 50 μm .

Physical Properties: *Cleavage:* None. *Fracture:* Hackly. *Tenacity:* Brittle. Hardness = 3-4
D(meas.) = n.d. D(calc.) = 4.070

Optical Properties: Transparent. *Color:* Brownish orange to deep red. *Streak:* Very pale orange.
Luster: Adamantine.
Optical Class: Isotropic. $n(\text{calc.}) = 2.084$

Cell Data: *Space Group:* $Im\bar{3}$. $a = 12.9078(6)$ $Z = 2$

X-ray Powder Pattern: Herrebøkasa quarry, Aspedammen, Østfold county, Norway.
9.107 (100), 2.635 (36), 2.889 (33), 1.726 (29), 3.233 (28), 3.454 (18), 4.567 (15)

Chemistry:	(1)	(1)
SiO	20.78	Nb ₂ O ₅ 65.64
ThO ₂	5.64	Ta ₂ O ₅ 1.78
TiO ₂	2.15	La ₂ O ₃ 0.52
Fe ₂ O ₃	10.56	Ce ₂ O ₃ 1.62
FeO	[2.73]	Nd ₂ O ₃ 0.44
MnO	0.82	<u>H₂O</u> [7.20]
CaO	0.28	Total 100.32
K ₂ O	0.16	

(1) Herrebøkasa quarry, Aspedammen, Østfold county, Norway; average of 10 electron microprobe analyses, H₂O calculated from structure analysis, presence of OH and H₂O confirmed by Raman spectroscopy, FeO calculated from structure analysis; corresponding to
K_{0.09}Ca_{0.13}Ce_{0.26}La_{0.08}Nd_{0.07}Fe²⁺_{1.00}Mn_{0.30}Fe³⁺_{3.48}Th_{0.56}Ti⁴⁺_{0.71}Si_{0.34}Nb_{12.98}Ta_{0.21}O₄₂(H₂O)₉(OH)₃.

Occurrence: In a complex granitic pegmatite on altered monazite.

Association: Monazite.

Distribution: Herrebøkasa quarry, 2 km north-northeast of Aspedammen, Østfold county, Norway.

Name: For the village near which the first specimens were collected.

Type Material: Department of Natural History, Royal Ontario Museum, Toronto, Canada (M56117).

References: (1) Cooper, M.A., Y.A. Abdu, N.A. Ball, P. Černý, F.C. Hawthorne, and R. Kristiansen (2012) Aspedamite, ideally $\square_{12}(\text{Fe}^{3+}, \text{Fe}^{2+})_3\text{Nb}_4[\text{Th}(\text{Nb}, \text{Fe}^{3+})_{12}\text{O}_{42}]\{(\text{H}_2\text{O}), (\text{OH})\}_{12}$, a new heteropolyniobite mineral species from the Herrebøkasa quarry, Aspedammen, Østfold, Southern Norway: Description and crystal structure. *Can. Mineral.*, 50, 793-804. (2) (2014) *Amer. Mineral.*, 99, 1511-1512 (abs. ref. 1).