

**Rhabdophane-(Nd)****(Nd, Ce, La)PO<sub>4</sub>·H<sub>2</sub>O**

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**Crystal Data:** Hexagonal. *Point Group:* 6/m 2/m 2/m. Botryoidal masses and thin films.**Physical Properties:** Hardness = [3–3.5] [by analogy to rhabdophane-(Ce)].  
D(meas.) = n.d. D(calc.) = [4.79]**Optical Properties:** Semitransparent. *Color:* Pale Pink, pale yellow. *Luster:* [Greasy.]  
*Optical Class:* [Uniaxial (+).]  $\omega$  = n.d.  $\epsilon$  = n.d.**Cell Data:** *Space Group:* P6<sub>2</sub>22. *a* = 6.960 *c* = 6.372 *Z* = 3**X-ray Powder Pattern:** Salisbury, Connecticut, USA.

3.02 (vsb), 4.40 (s), 2.83 (s), 2.15 (s), 6.07 (m), 3.49 (m), 1.859 (m)

<b>Chemistry:</b>	(1)	(2)	(1)	(2)	
U <sub>3</sub> O <sub>8</sub>		0.42	Tb <sub>4</sub> O <sub>7</sub>	0.4	
P <sub>2</sub> O <sub>5</sub>	23.1	28.59	Dy <sub>2</sub> O <sub>3</sub>	0.6	1.69
CO <sub>2</sub>	3.2		Ho <sub>2</sub> O <sub>3</sub>	0.3	0.40
Y <sub>2</sub> O <sub>3</sub>	8.9	4.02	Er <sub>2</sub> O <sub>3</sub>	1.1	1.12
La <sub>2</sub> O <sub>3</sub>	18.9	12.19	Tm <sub>2</sub> O <sub>3</sub>	0.2	0.50
Ce <sub>2</sub> O <sub>3</sub>	0.5		Yb <sub>2</sub> O <sub>3</sub>	0.9	0.40
Ce <sub>2</sub> O <sub>3</sub>		11.85	Lu <sub>2</sub> O <sub>3</sub>	0.2	
Pr <sub>2</sub> O <sub>3</sub>		1.02	Fe <sub>2</sub> O <sub>3</sub>		0.38
Pr <sub>6</sub> O <sub>11</sub>	0.5		CaO		0.26
Nd <sub>2</sub> O <sub>3</sub>	26.6	21.18	F	0.3	
Sm <sub>2</sub> O <sub>3</sub>	4.5	3.49	H <sub>2</sub> O <sup>+</sup>	5.9	
Eu <sub>2</sub> O <sub>3</sub>	0.9	1.78	H <sub>2</sub> O <sup>-</sup>	1.1	
Gd <sub>2</sub> O <sub>3</sub>	4.4	3.24	H <sub>2</sub> O		[7.13]
Tb <sub>2</sub> O <sub>3</sub>		0.34	–O = F <sub>2</sub>	[1.3]	
			Total	[101.2]	[100.00]

(1) Salisbury, Connecticut, USA. (2) Fowey Consols mine, Cornwall, England; by electron microprobe, H<sub>2</sub>O by difference; corresponds to (Nd<sub>0.31</sub>La<sub>0.19</sub>Ce<sub>0.18</sub>Y<sub>0.09</sub>Sm<sub>0.05</sub>Gd<sub>0.04</sub>Eu<sub>0.03</sub>Dy<sub>0.02</sub>Pr<sub>0.02</sub>Er<sub>0.02</sub>Ca<sub>0.01</sub>Fe<sub>0.01</sub>Tm<sub>0.01</sub>Tb<sub>0.01</sub>Ho<sub>0.01</sub>Yb<sub>0.01</sub>)<sub>Σ=1.01</sub>PO<sub>4</sub>•0.99H<sub>2</sub>O.**Occurrence:** A rare secondary mineral in hydrothermal base-metal deposits.**Association:** Lithiophorite, goethite, halloysite (Salisbury, Connecticut, USA).**Distribution:** Occurs in the Scovill mine, Salisbury, Litchfield Co., Connecticut, USA. From the Fowey Consols mine, Tywardreath, Cornwall, England. At the Clara mine, near Oberwolfach, and in the Silberbrünnle mine, near Gengenbach, Black Forest, Germany.**Name:** For the dominant rare earth, *neodymium*, and relation to *rhabdophane*-(Ce).**Type Material:** Yale University, New Haven, Connecticut, USA, 3.3135, 3.3137.**References:** (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 774. (2) Hildebrand, F.A., M.H. Carron, and H.J. Rose, Jr. (1957) Re-examination of rhabdophane (scovillite) from Salisbury, Connecticut. *Geol. Soc. Amer. Bull.*, 68, 1744–1745 (abs.). (3) Bowles, J.F.W. and D.J. Morgan (1984) The composition of rhabdophane. *Mineral. Mag.*, 48, 146–148. (4) Muto, T., R. Meyrowitz, A.M. Pommer, and T. Murano (1959) Ningyoite, a new uranous phosphate mineral from Japan. *Amer. Mineral.*, 44, 633–650.