

Monazite-(Nd)**(Nd, La, Ce)PO₄**

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Crystal Data: Monoclinic. *Point Group:* $2/m$. As long prismatic crystals, or grains, to 15 μm .

Physical Properties: *Cleavage:* [$\{100\}$, distinct; $\{010\}$, poor] [by analogy to monazite-(Ce)].
Tenacity: [Brittle.] *Hardness* = [5–5.5] *D*(meas.) = n.d. *D*(calc.) = 5.43

Optical Properties: Translucent. *Color:* Bright rose-red.
Optical Class: Biaxial (+). $\alpha = 1.793(2)$ $\beta = 1.795(2)$ $\gamma = 1.860(5)$ $2V$ (meas.) = 18° – 20°

Cell Data: *Space Group:* $P2_1/n$. $a = 6.745(4)$ $b = 6.964(4)$ $c = 6.435(4)$
 $\beta = 103.65(4)^\circ$ $Z = 4$

X-ray Powder Pattern: Pta. Glogstafel, Italy.
3.080 (100), 3.280 (60), 2.846 (50), 2.425 (40), 4.15 (30), 2.590 (30), 2.177 (30)

Chemistry:	(1)
P ₂ O ₅	28.65
SiO ₂	0.22
ZrO ₂	0.77
Ce ₂ O ₃	19.85
La ₂ O ₃	2.48
Pr ₂ O ₃	6.47
Nd ₂ O ₃	30.32
Sm ₂ O ₃	8.81
Gd ₂ O ₃	2.26
<u>Total</u>	<u>99.83</u>

(1) Pta. Glogstafel, Italy; by electron microprobe, average of three analyses; corresponding to $(\text{Nd}_{0.44}\text{Ce}_{0.29}\text{Sm}_{0.12}\text{Pr}_{0.09}\text{La}_{0.04}\text{Gd}_{0.03}\text{Zr}_{0.02})_{\Sigma=1.03}(\text{P}_{0.97}\text{Si}_{0.01})_{\Sigma=0.98}\text{O}_4$.

Mineral Group: Monazite group.

Occurrence: In fissures in aplitic veins through white-mica gneiss (Pta. Glogstafel, Italy); replacing brindleyite in bauxite (Marmara deposit, Greece); in volcanic-associated marine cherts (Kokšín, Czech Republic).

Association: Rutile, xenotime, gadolinite, bastnäsite, allanite, monazite-(Ce) (Pta. Glogstafel, Italy).

Distribution: From Pta. Glogstafel, Val Formazza, on the southeastern slope of Pizzo Cervandone, Alpe Devero, Val d'Aosta, Piedmont, Italy. In the Marmara bauxite deposit, Megora, Greece. At Kokšín, near Mítov, Czech Republic.

Name: For the member of the *monazite* group with dominant *neodymium*.

Type Material: Mineralogical Institute, University of Basel, Basel; Natural History Museum, Basel, Switzerland, 30803.

References: (1) Graeser, S. and H. Schwander (1987) Gasparite-(Ce) and monazite-(Nd): two new minerals to the monazite group from the Alps. Schweiz. Mineral. Petrog. Mitt., 67, 103–113. (2) (1988) Amer. Mineral., 73, 1494–1495 (abs. ref. 1).