$Na_{0.4}Ca_{4.2}[PO_4]_{1.8}[CO_3]_{1.2}[OH]$	*hP*80	(176) $P6_3/m$ – i^3h^6fe

$Na_{0.8}Ca_{8.4}(PO_4)_{3.6}(CO_3)_{2.4}(OH)_2$ [1], apatite family
Structural features: Infinite columns of base-linked CaO_6O_3 tricapped trigonal prisms (partial substitution and vacancies ignored) share atoms with PO_4 tetrahedra and CO_3 trigonal units (substitutional disorder, orientational disorder for the latter) to form a 3D-framework; OH in infinite columns of face-linked $(Ca,Na)_6$ octahedra parallel to [001] (partial disorder).

El Feki H. et al. (2000) [1]
$C_{1.20}Ca_{4.20}HNa_{0.39}O_{11.80}P_{1.80}$
$a = 0.93249$, $c = 0.69213$ nm, $c/a = 0.742$, $V = 0.5212$ nm^3, $Z = 2$

site	Wyck.	sym.	*x*	*y*	*z*	occ.	atomic environment
O1	12*i*	1	0.327	0.074	0.0678	0.6	
O2	12*i*	1	0.41	0.126	0.045	0.2	
C3	12*i*	1	0.429	0.031	0.174	0.2	
O4	6*h*	*m*..	0.121	0.47	$^1/_4$	0.4	
O5	6*h*	*m*..	0.167	0.486	$^1/_4$	0.6	
M6	6*h*	*m*..	0.2439	0.26	$^1/_4$	0.959	
P7	6*h*	*m*..	0.3934	0.0249	$^1/_4$	0.6	
O8	6*h*	*m*..	0.569	0.101	$^1/_4$	0.4	
O9	6*h*	*m*..	0.586	0.134	$^1/_4$	0.6	
M10	4*f*	3..	$^1/_3$	$^2/_3$	0.0003	0.861	tricapped trigonal prism O_9
(OH)11	4*e*	3..	0	0	0.14	0.5	single atom (OH)

M6 = 0.875Ca + 0.125Na; M10 = 0.98Ca + 0.02Na
Transformation from published data: *y*,*x*,-*z*
Experimental: powder, diffractometer, X-rays, R = 0.041

Remarks: Short interatomic distances for partly occupied site(s). Hydrogen atoms are not taken into consideration for Pearson symbol, Wyckoff sequence and atomic environments. In table 8 of [1] the *y*-coordinate of former Oc(3) is misprinted as 0284 instead of 0.284.

References: [1] El Feki H., Savariault J.M., Ben Salah A., Jemal M. (2000), Solid State Sci. 2, 577-586.