$Mg_3BeAl_8O_{16}$	*hP*56	(186) $P6_3mc$ – $c^6b^7a^3$

$Mg_3BeAl_8O_{16}$ [2], taaffeite
Structural features: Close-packed O layers in hc_3 stacking; Al and Mg in octahedral and tetrahedral, Be in tetrahedral voids. Infinite slabs of edge-linked AlO_6 octahedra share atoms with MgO_6 and additional AlO_6 octahedra, MgO_4 and BeO_4 tetrahedra to form a 3D-framework with spinel-type slabs.

Nuber B., Schmetzer K. (1983) [1]
$Al_8BeMg_3O_{16}$
a = 0.56867, c = 1.8337 nm, c/a = 3.225, V = 0.5135 nm^3, Z = 2

site	Wyck.	sym.	*x*	*y*	*z*	occ.	atomic environment
Al1	6*c*	.*m*.	0.1665	0.8335	0.4475		octahedron O_6
O2	6*c*	.*m*.	0.185	0.8149	0.2608		tetrahedron $BeAl_2Mg$
Al3	6*c*	.*m*.	0.4987	0.5012	0.2018		octahedron O_6
O4	6*c*	.*m*.	0.5178	0.4822	0.0091		tetrahedron Al_3Mg
O5	6*c*	.*m*.	0.8146	0.1853	0.1424		tetrahedron Al_3Mg
O6	6*c*	.*m*.	0.8378	0.1622	0.3908		tetrahedron Al_3Mg
Mg7	2*b*	3*m*.	$^1/_3$	$^2/_3$	0.0417		tetrahedron O_4
O8	2*b*	3*m*.	$^1/_3$	$^2/_3$	0.1458		tetrahedron $MgAl_3$
Be9	2*b*	3*m*.	$^1/_3$	$^2/_3$	0.3041		tetrahedron O_4
O10	2*b*	3*m*.	$^1/_3$	$^2/_3$	0.3931		tetrahedron $BeAl_3$
Al11	2*b*	3*m*.	$^1/_3$	$^2/_3$	0.5758		octahedron O_6
O12	2*b*	3*m*.	$^1/_3$	$^2/_3$	0.7604		tetrahedron Al_4
Al13	2*b*	3*m*.	$^1/_3$	$^2/_3$	0.8577		tetrahedron O_4
O14	2*a*	3*m*.	0	0	0.0		tetrahedron Al_3Mg
Mg15	2*a*	3*m*.	0	0	0.1074		tetrahedron O_4
Mg16	2*a*	3*m*.	0	0	0.3083		octahedron O_6

Transformation from published data: -*x*,-*y*,-*z*; origin shift 0 0 0.6917
Experimental: single crystal, diffractometer, X-rays, wR = 0.031

Remarks: Natural specimen from Niriella Village, Ratna Pura, Sri Lanka. Composition $Mg_{2.81}Fe_{0.15}$_ $Zn_{0.04}[BeAl_8O_{16}]$ from electron microprobe analysis. The authors state that Fe probably substitutes for Mg on tetrahedral sites. In table 2 of [1] the Wyckoff positions of former O3, O5 and O7 are misprinted as 2*a* instead of 2*b*.

References: [1] Nuber B., Schmetzer K. (1983), Neues Jahrb. Mineral., Monatsh. 1983, 393-402. [2] Peng C.C., Wang K.J. (1963), Sci. Sin. (Engl. Ed.) 12, 276-278.