Pinnoite ($MgB_2O[OH]_6$) Structure: A2B6CD7_tP64_77_2d_6d_d_ab6d-001

This structure previously used the label(s) `A2B6CD7_tP64_77_2d_6d_d_ab6d`. Calls to these addresses will be redirected here.

Cite this page as:

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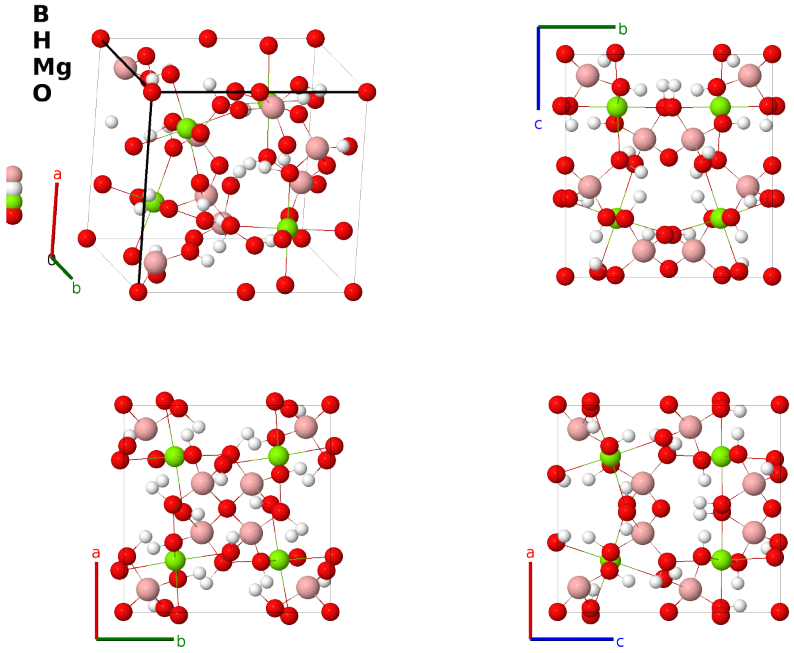
https://aflow.org/prototype-encyclopedia/Z918

https://aflow.org/prototype-encyclopedia/A2B6CD7_tP64_77_2d_6d_d_ab6d-001

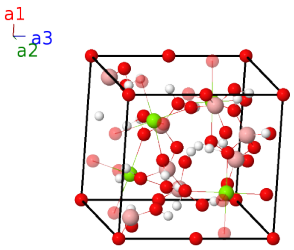


Prototype	$B_2H_6MgO_7$
AFLOW prototype label	A2B6CD7_tP64_77_2d_6d_d_ab6d-001
Mineral name	pinnoite
ICSD	20662
CCDC	1598424
Pearson symbol	tP64
Space group number	77
Space group symbol	$P4_2$
AFLOW prototype command	`aflow --proto=A2B6CD7_tP64_77_2d_6d_d_ab6d-001 --params=`$a, c/a, z_1, z_2, x_3, y_3, z_3, x_4, y_4, z_4, x_5, y_5, z_5, x_6, y_6, z_6, x_7, y_7, z_7, x_8, y_8, z_8, x_9, y_9, z_9, x_{10}, y_{10}, z_{10}, x_{11}, y_{11}, z_{11}, x_{12}, y_{12}, z_{12}, x_{13}, y_{13}, z_{13}, x_{14}, y_{14}, z_{14}, x_{15}, y_{15}, z_{15}, x_{16}, y_{16}, z_{16}, x_{17}, y_{17}, z_{17}$

- (Genkina, 1983) state that their Wyckoff positions were to be multiplied by 10^{-4}. This is not the case for the z-coordinates and the x- and y-coordinates of the hydrogen atoms: those coordinates should be multiplied by 10^{-3}. This confusion led to incorrect hydrogen-oxygen distances in both our original page (Hicks, 2019) and in (Villars, 2016). We believe the current interpretation is correct, as our Mg-O and B-O distances agree with (Genkina, 1983) and all of our O-H bonds are on the order of 1Å. The ICSD CIF also interprets the coordinates in this fashion.

Simple Tetragonal primitive vectors

$$\begin{aligned}
\mathbf{a_1} &= a\,\hat{\mathbf{x}} \\
\mathbf{a_2} &= a\,\hat{\mathbf{y}} \\
\mathbf{a_3} &= c\,\hat{\mathbf{z}}
\end{aligned}$$



Basis vectors

		Lattice coordinates		Cartesian coordinates	Wyckoff position	Atom type
$\mathbf{B_1}$	=	$z_1\,\mathbf{a}_3$	=	$cz_1\,\hat{\mathbf{z}}$	(2a)	O I
$\mathbf{B_2}$	=	$\left(z_1+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$c\left(z_1+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(2a)	O I
$\mathbf{B_3}$	=	$\frac{1}{2}\,\mathbf{a}_1+\frac{1}{2}\,\mathbf{a}_2+z_2\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}}+\frac{1}{2}a\,\hat{\mathbf{y}}+cz_2\,\hat{\mathbf{z}}$	(2b)	O II
$\mathbf{B_4}$	=	$\frac{1}{2}\,\mathbf{a}_1+\frac{1}{2}\,\mathbf{a}_2+\left(z_2+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}}+\frac{1}{2}a\,\hat{\mathbf{y}}+c\left(z_2+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(2b)	O II
$\mathbf{B_5}$	=	$x_3\,\mathbf{a}_1+y_3\,\mathbf{a}_2+z_3\,\mathbf{a}_3$	=	$ax_3\,\hat{\mathbf{x}}+ay_3\,\hat{\mathbf{y}}+cz_3\,\hat{\mathbf{z}}$	(4d)	B I
$\mathbf{B_6}$	=	$-x_3\,\mathbf{a}_1-y_3\,\mathbf{a}_2+z_3\,\mathbf{a}_3$	=	$-ax_3\,\hat{\mathbf{x}}-ay_3\,\hat{\mathbf{y}}+cz_3\,\hat{\mathbf{z}}$	(4d)	B I
$\mathbf{B_7}$	=	$-y_3\,\mathbf{a}_1+x_3\,\mathbf{a}_2+\left(z_3+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ay_3\,\hat{\mathbf{x}}+ax_3\,\hat{\mathbf{y}}+c\left(z_3+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	B I
$\mathbf{B_8}$	=	$y_3\,\mathbf{a}_1-x_3\,\mathbf{a}_2+\left(z_3+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ay_3\,\hat{\mathbf{x}}-ax_3\,\hat{\mathbf{y}}+c\left(z_3+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	B I
$\mathbf{B_9}$	=	$x_4\,\mathbf{a}_1+y_4\,\mathbf{a}_2+z_4\,\mathbf{a}_3$	=	$ax_4\,\hat{\mathbf{x}}+ay_4\,\hat{\mathbf{y}}+cz_4\,\hat{\mathbf{z}}$	(4d)	B II
$\mathbf{B_{10}}$	=	$-x_4\,\mathbf{a}_1-y_4\,\mathbf{a}_2+z_4\,\mathbf{a}_3$	=	$-ax_4\,\hat{\mathbf{x}}-ay_4\,\hat{\mathbf{y}}+cz_4\,\hat{\mathbf{z}}$	(4d)	B II
$\mathbf{B_{11}}$	=	$-y_4\,\mathbf{a}_1+x_4\,\mathbf{a}_2+\left(z_4+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ay_4\,\hat{\mathbf{x}}+ax_4\,\hat{\mathbf{y}}+c\left(z_4+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	B II
$\mathbf{B_{12}}$	=	$y_4\,\mathbf{a}_1-x_4\,\mathbf{a}_2+\left(z_4+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ay_4\,\hat{\mathbf{x}}-ax_4\,\hat{\mathbf{y}}+c\left(z_4+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	B II
$\mathbf{B_{13}}$	=	$x_5\,\mathbf{a}_1+y_5\,\mathbf{a}_2+z_5\,\mathbf{a}_3$	=	$ax_5\,\hat{\mathbf{x}}+ay_5\,\hat{\mathbf{y}}+cz_5\,\hat{\mathbf{z}}$	(4d)	H I
$\mathbf{B_{14}}$	=	$-x_5\,\mathbf{a}_1-y_5\,\mathbf{a}_2+z_5\,\mathbf{a}_3$	=	$-ax_5\,\hat{\mathbf{x}}-ay_5\,\hat{\mathbf{y}}+cz_5\,\hat{\mathbf{z}}$	(4d)	H I
$\mathbf{B_{15}}$	=	$-y_5\,\mathbf{a}_1+x_5\,\mathbf{a}_2+\left(z_5+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ay_5\,\hat{\mathbf{x}}+ax_5\,\hat{\mathbf{y}}+c\left(z_5+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	H I
$\mathbf{B_{16}}$	=	$y_5\,\mathbf{a}_1-x_5\,\mathbf{a}_2+\left(z_5+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ay_5\,\hat{\mathbf{x}}-ax_5\,\hat{\mathbf{y}}+c\left(z_5+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	H I
$\mathbf{B_{17}}$	=	$x_6\,\mathbf{a}_1+y_6\,\mathbf{a}_2+z_6\,\mathbf{a}_3$	=	$ax_6\,\hat{\mathbf{x}}+ay_6\,\hat{\mathbf{y}}+cz_6\,\hat{\mathbf{z}}$	(4d)	H II
$\mathbf{B_{18}}$	=	$-x_6\,\mathbf{a}_1-y_6\,\mathbf{a}_2+z_6\,\mathbf{a}_3$	=	$-ax_6\,\hat{\mathbf{x}}-ay_6\,\hat{\mathbf{y}}+cz_6\,\hat{\mathbf{z}}$	(4d)	H II
$\mathbf{B_{19}}$	=	$-y_6\,\mathbf{a}_1+x_6\,\mathbf{a}_2+\left(z_6+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ay_6\,\hat{\mathbf{x}}+ax_6\,\hat{\mathbf{y}}+c\left(z_6+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	H II
$\mathbf{B_{20}}$	=	$y_6\,\mathbf{a}_1-x_6\,\mathbf{a}_2+\left(z_6+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ay_6\,\hat{\mathbf{x}}-ax_6\,\hat{\mathbf{y}}+c\left(z_6+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	H II
$\mathbf{B_{21}}$	=	$x_7\,\mathbf{a}_1+y_7\,\mathbf{a}_2+z_7\,\mathbf{a}_3$	=	$ax_7\,\hat{\mathbf{x}}+ay_7\,\hat{\mathbf{y}}+cz_7\,\hat{\mathbf{z}}$	(4d)	H III
$\mathbf{B_{22}}$	=	$-x_7\,\mathbf{a}_1-y_7\,\mathbf{a}_2+z_7\,\mathbf{a}_3$	=	$-ax_7\,\hat{\mathbf{x}}-ay_7\,\hat{\mathbf{y}}+cz_7\,\hat{\mathbf{z}}$	(4d)	H III
$\mathbf{B_{23}}$	=	$-y_7\,\mathbf{a}_1+x_7\,\mathbf{a}_2+\left(z_7+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ay_7\,\hat{\mathbf{x}}+ax_7\,\hat{\mathbf{y}}+c\left(z_7+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	H III

$\mathbf{B_{24}}$	=	$y_7\,\mathbf{a}_1 - x_7\,\mathbf{a}_2 + \left(z_7 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$ay_7\,\hat{\mathbf{x}} - ax_7\,\hat{\mathbf{y}} + c\left(z_7 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	H III
$\mathbf{B_{25}}$	=	$x_8\,\mathbf{a}_1 + y_8\,\mathbf{a}_2 + z_8\,\mathbf{a}_3$	=	$ax_8\,\hat{\mathbf{x}} + ay_8\,\hat{\mathbf{y}} + cz_8\,\hat{\mathbf{z}}$	(4d)	H IV
$\mathbf{B_{26}}$	=	$-x_8\,\mathbf{a}_1 - y_8\,\mathbf{a}_2 + z_8\,\mathbf{a}_3$	=	$-ax_8\,\hat{\mathbf{x}} - ay_8\,\hat{\mathbf{y}} + cz_8\,\hat{\mathbf{z}}$	(4d)	H IV
$\mathbf{B_{27}}$	=	$-y_8\,\mathbf{a}_1 + x_8\,\mathbf{a}_2 + \left(z_8 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ay_8\,\hat{\mathbf{x}} + ax_8\,\hat{\mathbf{y}} + c\left(z_8 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	H IV
$\mathbf{B_{28}}$	=	$y_8\,\mathbf{a}_1 - x_8\,\mathbf{a}_2 + \left(z_8 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$ay_8\,\hat{\mathbf{x}} - ax_8\,\hat{\mathbf{y}} + c\left(z_8 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	H IV
$\mathbf{B_{29}}$	=	$x_9\,\mathbf{a}_1 + y_9\,\mathbf{a}_2 + z_9\,\mathbf{a}_3$	=	$ax_9\,\hat{\mathbf{x}} + ay_9\,\hat{\mathbf{y}} + cz_9\,\hat{\mathbf{z}}$	(4d)	H V
$\mathbf{B_{30}}$	=	$-x_9\,\mathbf{a}_1 - y_9\,\mathbf{a}_2 + z_9\,\mathbf{a}_3$	=	$-ax_9\,\hat{\mathbf{x}} - ay_9\,\hat{\mathbf{y}} + cz_9\,\hat{\mathbf{z}}$	(4d)	H V
$\mathbf{B_{31}}$	=	$-y_9\,\mathbf{a}_1 + x_9\,\mathbf{a}_2 + \left(z_9 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ay_9\,\hat{\mathbf{x}} + ax_9\,\hat{\mathbf{y}} + c\left(z_9 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	H V
$\mathbf{B_{32}}$	=	$y_9\,\mathbf{a}_1 - x_9\,\mathbf{a}_2 + \left(z_9 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$ay_9\,\hat{\mathbf{x}} - ax_9\,\hat{\mathbf{y}} + c\left(z_9 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	H V
$\mathbf{B_{33}}$	=	$x_{10}\,\mathbf{a}_1 + y_{10}\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3$	=	$ax_{10}\,\hat{\mathbf{x}} + ay_{10}\,\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}}$	(4d)	H VI
$\mathbf{B_{34}}$	=	$-x_{10}\,\mathbf{a}_1 - y_{10}\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3$	=	$-ax_{10}\,\hat{\mathbf{x}} - ay_{10}\,\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}}$	(4d)	H VI
$\mathbf{B_{35}}$	=	$-y_{10}\,\mathbf{a}_1 + x_{10}\,\mathbf{a}_2 + \left(z_{10} + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ay_{10}\,\hat{\mathbf{x}} + ax_{10}\,\hat{\mathbf{y}} + c\left(z_{10} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	H VI
$\mathbf{B_{36}}$	=	$y_{10}\,\mathbf{a}_1 - x_{10}\,\mathbf{a}_2 + \left(z_{10} + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$ay_{10}\,\hat{\mathbf{x}} - ax_{10}\,\hat{\mathbf{y}} + c\left(z_{10} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	H VI
$\mathbf{B_{37}}$	=	$x_{11}\,\mathbf{a}_1 + y_{11}\,\mathbf{a}_2 + z_{11}\,\mathbf{a}_3$	=	$ax_{11}\,\hat{\mathbf{x}} + ay_{11}\,\hat{\mathbf{y}} + cz_{11}\,\hat{\mathbf{z}}$	(4d)	Mg I
$\mathbf{B_{38}}$	=	$-x_{11}\,\mathbf{a}_1 - y_{11}\,\mathbf{a}_2 + z_{11}\,\mathbf{a}_3$	=	$-ax_{11}\,\hat{\mathbf{x}} - ay_{11}\,\hat{\mathbf{y}} + cz_{11}\,\hat{\mathbf{z}}$	(4d)	Mg I
$\mathbf{B_{39}}$	=	$-y_{11}\,\mathbf{a}_1 + x_{11}\,\mathbf{a}_2 + \left(z_{11} + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ay_{11}\,\hat{\mathbf{x}} + ax_{11}\,\hat{\mathbf{y}} + c\left(z_{11} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	Mg I
$\mathbf{B_{40}}$	=	$y_{11}\,\mathbf{a}_1 - x_{11}\,\mathbf{a}_2 + \left(z_{11} + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$ay_{11}\,\hat{\mathbf{x}} - ax_{11}\,\hat{\mathbf{y}} + c\left(z_{11} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	Mg I
$\mathbf{B_{41}}$	=	$x_{12}\,\mathbf{a}_1 + y_{12}\,\mathbf{a}_2 + z_{12}\,\mathbf{a}_3$	=	$ax_{12}\,\hat{\mathbf{x}} + ay_{12}\,\hat{\mathbf{y}} + cz_{12}\,\hat{\mathbf{z}}$	(4d)	O III
$\mathbf{B_{42}}$	=	$-x_{12}\,\mathbf{a}_1 - y_{12}\,\mathbf{a}_2 + z_{12}\,\mathbf{a}_3$	=	$-ax_{12}\,\hat{\mathbf{x}} - ay_{12}\,\hat{\mathbf{y}} + cz_{12}\,\hat{\mathbf{z}}$	(4d)	O III
$\mathbf{B_{43}}$	=	$-y_{12}\,\mathbf{a}_1 + x_{12}\,\mathbf{a}_2 + \left(z_{12} + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ay_{12}\,\hat{\mathbf{x}} + ax_{12}\,\hat{\mathbf{y}} + c\left(z_{12} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	O III
$\mathbf{B_{44}}$	=	$y_{12}\,\mathbf{a}_1 - x_{12}\,\mathbf{a}_2 + \left(z_{12} + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$ay_{12}\,\hat{\mathbf{x}} - ax_{12}\,\hat{\mathbf{y}} + c\left(z_{12} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	O III
$\mathbf{B_{45}}$	=	$x_{13}\,\mathbf{a}_1 + y_{13}\,\mathbf{a}_2 + z_{13}\,\mathbf{a}_3$	=	$ax_{13}\,\hat{\mathbf{x}} + ay_{13}\,\hat{\mathbf{y}} + cz_{13}\,\hat{\mathbf{z}}$	(4d)	O IV
$\mathbf{B_{46}}$	=	$-x_{13}\,\mathbf{a}_1 - y_{13}\,\mathbf{a}_2 + z_{13}\,\mathbf{a}_3$	=	$-ax_{13}\,\hat{\mathbf{x}} - ay_{13}\,\hat{\mathbf{y}} + cz_{13}\,\hat{\mathbf{z}}$	(4d)	O IV
$\mathbf{B_{47}}$	=	$-y_{13}\,\mathbf{a}_1 + x_{13}\,\mathbf{a}_2 + \left(z_{13} + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ay_{13}\,\hat{\mathbf{x}} + ax_{13}\,\hat{\mathbf{y}} + c\left(z_{13} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	O IV
$\mathbf{B_{48}}$	=	$y_{13}\,\mathbf{a}_1 - x_{13}\,\mathbf{a}_2 + \left(z_{13} + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$ay_{13}\,\hat{\mathbf{x}} - ax_{13}\,\hat{\mathbf{y}} + c\left(z_{13} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	O IV
$\mathbf{B_{49}}$	=	$x_{14}\,\mathbf{a}_1 + y_{14}\,\mathbf{a}_2 + z_{14}\,\mathbf{a}_3$	=	$ax_{14}\,\hat{\mathbf{x}} + ay_{14}\,\hat{\mathbf{y}} + cz_{14}\,\hat{\mathbf{z}}$	(4d)	O V
$\mathbf{B_{50}}$	=	$-x_{14}\,\mathbf{a}_1 - y_{14}\,\mathbf{a}_2 + z_{14}\,\mathbf{a}_3$	=	$-ax_{14}\,\hat{\mathbf{x}} - ay_{14}\,\hat{\mathbf{y}} + cz_{14}\,\hat{\mathbf{z}}$	(4d)	O V
$\mathbf{B_{51}}$	=	$-y_{14}\,\mathbf{a}_1 + x_{14}\,\mathbf{a}_2 + \left(z_{14} + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ay_{14}\,\hat{\mathbf{x}} + ax_{14}\,\hat{\mathbf{y}} + c\left(z_{14} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	O V
$\mathbf{B_{52}}$	=	$y_{14}\,\mathbf{a}_1 - x_{14}\,\mathbf{a}_2 + \left(z_{14} + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$ay_{14}\,\hat{\mathbf{x}} - ax_{14}\,\hat{\mathbf{y}} + c\left(z_{14} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	O V
$\mathbf{B_{53}}$	=	$x_{15}\,\mathbf{a}_1 + y_{15}\,\mathbf{a}_2 + z_{15}\,\mathbf{a}_3$	=	$ax_{15}\,\hat{\mathbf{x}} + ay_{15}\,\hat{\mathbf{y}} + cz_{15}\,\hat{\mathbf{z}}$	(4d)	O VI
$\mathbf{B_{54}}$	=	$-x_{15}\,\mathbf{a}_1 - y_{15}\,\mathbf{a}_2 + z_{15}\,\mathbf{a}_3$	=	$-ax_{15}\,\hat{\mathbf{x}} - ay_{15}\,\hat{\mathbf{y}} + cz_{15}\,\hat{\mathbf{z}}$	(4d)	O VI
$\mathbf{B_{55}}$	=	$-y_{15}\,\mathbf{a}_1 + x_{15}\,\mathbf{a}_2 + \left(z_{15} + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ay_{15}\,\hat{\mathbf{x}} + ax_{15}\,\hat{\mathbf{y}} + c\left(z_{15} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	O VI
$\mathbf{B_{56}}$	=	$y_{15}\,\mathbf{a}_1 - x_{15}\,\mathbf{a}_2 + \left(z_{15} + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$ay_{15}\,\hat{\mathbf{x}} - ax_{15}\,\hat{\mathbf{y}} + c\left(z_{15} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	O VI
$\mathbf{B_{57}}$	=	$x_{16}\,\mathbf{a}_1 + y_{16}\,\mathbf{a}_2 + z_{16}\,\mathbf{a}_3$	=	$ax_{16}\,\hat{\mathbf{x}} + ay_{16}\,\hat{\mathbf{y}} + cz_{16}\,\hat{\mathbf{z}}$	(4d)	O VII
$\mathbf{B_{58}}$	=	$-x_{16}\,\mathbf{a}_1 - y_{16}\,\mathbf{a}_2 + z_{16}\,\mathbf{a}_3$	=	$-ax_{16}\,\hat{\mathbf{x}} - ay_{16}\,\hat{\mathbf{y}} + cz_{16}\,\hat{\mathbf{z}}$	(4d)	O VII
$\mathbf{B_{59}}$	=	$-y_{16}\,\mathbf{a}_1 + x_{16}\,\mathbf{a}_2 + \left(z_{16} + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ay_{16}\,\hat{\mathbf{x}} + ax_{16}\,\hat{\mathbf{y}} + c\left(z_{16} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	O VII
$\mathbf{B_{60}}$	=	$y_{16}\,\mathbf{a}_1 - x_{16}\,\mathbf{a}_2 + \left(z_{16} + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$ay_{16}\,\hat{\mathbf{x}} - ax_{16}\,\hat{\mathbf{y}} + c\left(z_{16} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	O VII
$\mathbf{B_{61}}$	=	$x_{17}\,\mathbf{a}_1 + y_{17}\,\mathbf{a}_2 + z_{17}\,\mathbf{a}_3$	=	$ax_{17}\,\hat{\mathbf{x}} + ay_{17}\,\hat{\mathbf{y}} + cz_{17}\,\hat{\mathbf{z}}$	(4d)	O VIII
$\mathbf{B_{62}}$	=	$-x_{17}\,\mathbf{a}_1 - y_{17}\,\mathbf{a}_2 + z_{17}\,\mathbf{a}_3$	=	$-ax_{17}\,\hat{\mathbf{x}} - ay_{17}\,\hat{\mathbf{y}} + cz_{17}\,\hat{\mathbf{z}}$	(4d)	O VIII
$\mathbf{B_{63}}$	=	$-y_{17}\,\mathbf{a}_1 + x_{17}\,\mathbf{a}_2 + \left(z_{17} + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ay_{17}\,\hat{\mathbf{x}} + ax_{17}\,\hat{\mathbf{y}} + c\left(z_{17} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	O VIII
$\mathbf{B_{64}}$	=	$y_{17}\,\mathbf{a}_1 - x_{17}\,\mathbf{a}_2 + \left(z_{17} + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$ay_{17}\,\hat{\mathbf{x}} - ax_{17}\,\hat{\mathbf{y}} + c\left(z_{17} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4d)	O VIII

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