$Ca_4Al_6O_{16}S$ Structure: A6B4C16D_oP108_27_abcd4e_4e_16e_e-001

This structure originally had the label `A6B4C16D_oP108_27_abcd4e_4e_16e_e`. Calls to that address will be redirected here.

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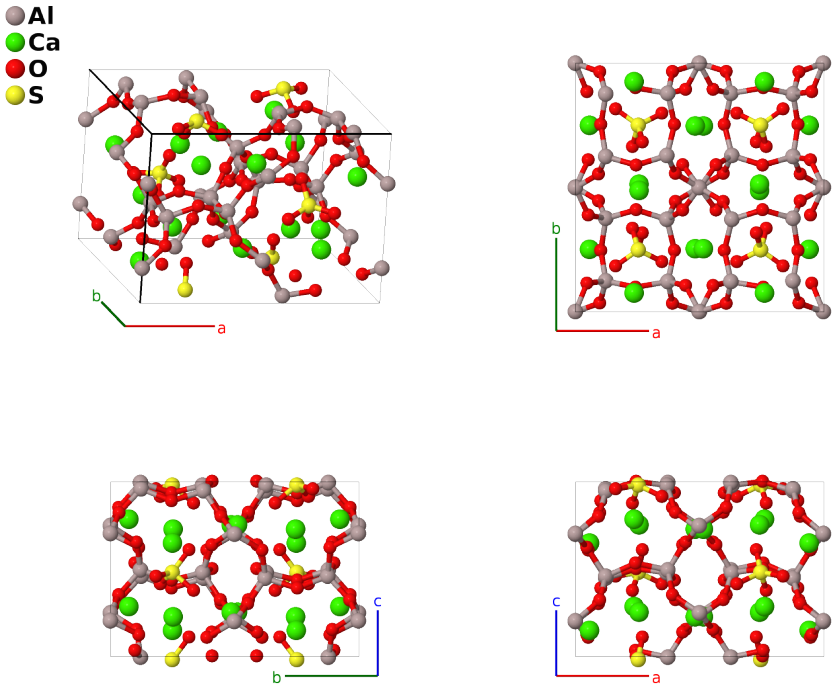
https://aflow.org/p/TBPX

https://aflow.org/p/A6B4C16D_oP108_27_abcd4e_4e_16e_e-001

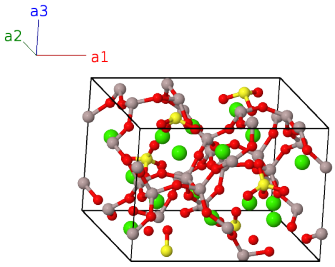


Prototype	$Al_6Ca_4O_{16}S$
AFLOW prototype label	A6B4C16D_oP108_27_abcd4e_4e_16e_e-001
ICSD	80361
Pearson symbol	oP108
Space group number	27
Space group symbol	$Pcc2$
AFLOW prototype command	`aflow --proto=A6B4C16D_oP108_27_abcd4e_4e_16e_e-001 --params=`$a, b/a, c/a, z_1, z_2, z_3, z_4, x_5, y_5, z_5, x_6, y_6, z_6, x_7, y_7, z_7, x_8, y_8, z_8, x_9, y_9, z_9, x_{10}, y_{10}, z_{10}, x_{11}, y_{11}, z_{11}, x_{12}, y_{12}, z_{12}, x_{13}, y_{13}, z_{13}, x_{14}, y_{14}, z_{14}, x_{15}, y_{15}, z_{15}, x_{16}, y_{16}, z_{16}, x_{17}, y_{17}, z_{17}, x_{18}, y_{18}, z_{18}, x_{19}, y_{19}, z_{19}, x_{20}, y_{20}, z_{20}, x_{21}, y_{21}, z_{21}, x_{22}, y_{22}, z_{22}, x_{23}, y_{23}, z_{23}, x_{24}, y_{24}, z_{24}, x_{25}, y_{25}, z_{25}, x_{26}, y_{26}, z_{26}, x_{27}, y_{27}, z_{27}, x_{28}, y_{28}, z_{28}, x_{29}, y_{29}, z_{29}$

Other compounds with this structure
$Sr_4Al_6O_{16}S$

Simple Orthorhombic primitive vectors

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



Basis vectors

		Lattice coordinates		Cartesian coordinates	Wyckoff position	Atom type
$\mathbf{B_1}$	=	$z_1\,\mathbf{a}_3$	=	$cz_1\,\hat{\mathbf{z}}$	(2a)	Al 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)	Al I
$\mathbf{B_3}$	=	$\frac{1}{2}\,\mathbf{a}_2+z_2\,\mathbf{a}_3$	=	$\frac{1}{2}b\,\hat{\mathbf{y}}+cz_2\,\hat{\mathbf{z}}$	(2b)	Al II
$\mathbf{B_4}$	=	$\frac{1}{2}\,\mathbf{a}_2+\left(z_2+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{2}b\,\hat{\mathbf{y}}+c\left(z_2+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(2b)	Al II
$\mathbf{B_5}$	=	$\frac{1}{2}\,\mathbf{a}_1+z_3\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}}+cz_3\,\hat{\mathbf{z}}$	(2c)	Al III
$\mathbf{B_6}$	=	$\frac{1}{2}\,\mathbf{a}_1+\left(z_3+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}}+c\left(z_3+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(2c)	Al III
$\mathbf{B_7}$	=	$\frac{1}{2}\,\mathbf{a}_1+\frac{1}{2}\,\mathbf{a}_2+z_4\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}}+\frac{1}{2}b\,\hat{\mathbf{y}}+cz_4\,\hat{\mathbf{z}}$	(2d)	Al IV
$\mathbf{B_8}$	=	$\frac{1}{2}\,\mathbf{a}_1+\frac{1}{2}\,\mathbf{a}_2+\left(z_4+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}}+\frac{1}{2}b\,\hat{\mathbf{y}}+c\left(z_4+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(2d)	Al IV
$\mathbf{B_9}$	=	$x_5\,\mathbf{a}_1+y_5\,\mathbf{a}_2+z_5\,\mathbf{a}_3$	=	$ax_5\,\hat{\mathbf{x}}+by_5\,\hat{\mathbf{y}}+cz_5\,\hat{\mathbf{z}}$	(4e)	Al V
$\mathbf{B_{10}}$	=	$-x_5\,\mathbf{a}_1-y_5\,\mathbf{a}_2+z_5\,\mathbf{a}_3$	=	$-ax_5\,\hat{\mathbf{x}}-by_5\,\hat{\mathbf{y}}+cz_5\,\hat{\mathbf{z}}$	(4e)	Al V
$\mathbf{B_{11}}$	=	$x_5\,\mathbf{a}_1-y_5\,\mathbf{a}_2+\left(z_5+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_5\,\hat{\mathbf{x}}-by_5\,\hat{\mathbf{y}}+c\left(z_5+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4e)	Al V
$\mathbf{B_{12}}$	=	$-x_5\,\mathbf{a}_1+y_5\,\mathbf{a}_2+\left(z_5+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_5\,\hat{\mathbf{x}}+by_5\,\hat{\mathbf{y}}+c\left(z_5+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4e)	Al V
$\mathbf{B_{13}}$	=	$x_6\,\mathbf{a}_1+y_6\,\mathbf{a}_2+z_6\,\mathbf{a}_3$	=	$ax_6\,\hat{\mathbf{x}}+by_6\,\hat{\mathbf{y}}+cz_6\,\hat{\mathbf{z}}$	(4e)	Al VI
$\mathbf{B_{14}}$	=	$-x_6\,\mathbf{a}_1-y_6\,\mathbf{a}_2+z_6\,\mathbf{a}_3$	=	$-ax_6\,\hat{\mathbf{x}}-by_6\,\hat{\mathbf{y}}+cz_6\,\hat{\mathbf{z}}$	(4e)	Al VI
$\mathbf{B_{15}}$	=	$x_6\,\mathbf{a}_1-y_6\,\mathbf{a}_2+\left(z_6+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_6\,\hat{\mathbf{x}}-by_6\,\hat{\mathbf{y}}+c\left(z_6+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4e)	Al VI
$\mathbf{B_{16}}$	=	$-x_6\,\mathbf{a}_1+y_6\,\mathbf{a}_2+\left(z_6+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_6\,\hat{\mathbf{x}}+by_6\,\hat{\mathbf{y}}+c\left(z_6+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4e)	Al VI
$\mathbf{B_{17}}$	=	$x_7\,\mathbf{a}_1+y_7\,\mathbf{a}_2+z_7\,\mathbf{a}_3$	=	$ax_7\,\hat{\mathbf{x}}+by_7\,\hat{\mathbf{y}}+cz_7\,\hat{\mathbf{z}}$	(4e)	Al VII
$\mathbf{B_{18}}$	=	$-x_7\,\mathbf{a}_1-y_7\,\mathbf{a}_2+z_7\,\mathbf{a}_3$	=	$-ax_7\,\hat{\mathbf{x}}-by_7\,\hat{\mathbf{y}}+cz_7\,\hat{\mathbf{z}}$	(4e)	Al VII
$\mathbf{B_{19}}$	=	$x_7\,\mathbf{a}_1-y_7\,\mathbf{a}_2+\left(z_7+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_7\,\hat{\mathbf{x}}-by_7\,\hat{\mathbf{y}}+c\left(z_7+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4e)	Al VII
$\mathbf{B_{20}}$	=	$-x_7\,\mathbf{a}_1+y_7\,\mathbf{a}_2+\left(z_7+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_7\,\hat{\mathbf{x}}+by_7\,\hat{\mathbf{y}}+c\left(z_7+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4e)	Al VII
$\mathbf{B_{21}}$	=	$x_8\,\mathbf{a}_1+y_8\,\mathbf{a}_2+z_8\,\mathbf{a}_3$	=	$ax_8\,\hat{\mathbf{x}}+by_8\,\hat{\mathbf{y}}+cz_8\,\hat{\mathbf{z}}$	(4e)	Al VIII
$\mathbf{B_{22}}$	=	$-x_8\,\mathbf{a}_1-y_8\,\mathbf{a}_2+z_8\,\mathbf{a}_3$	=	$-ax_8\,\hat{\mathbf{x}}-by_8\,\hat{\mathbf{y}}+cz_8\,\hat{\mathbf{z}}$	(4e)	Al VIII
$\mathbf{B_{23}}$	=	$x_8\,\mathbf{a}_1-y_8\,\mathbf{a}_2+\left(z_8+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_8\,\hat{\mathbf{x}}-by_8\,\hat{\mathbf{y}}+c\left(z_8+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4e)	Al VIII
$\mathbf{B_{24}}$	=	$-x_8\,\mathbf{a}_1+y_8\,\mathbf{a}_2+\left(z_8+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_8\,\hat{\mathbf{x}}+by_8\,\hat{\mathbf{y}}+c\left(z_8+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4e)	Al VIII
$\mathbf{B_{25}}$	=	$x_9\,\mathbf{a}_1+y_9\,\mathbf{a}_2+z_9\,\mathbf{a}_3$	=	$ax_9\,\hat{\mathbf{x}}+by_9\,\hat{\mathbf{y}}+cz_9\,\hat{\mathbf{z}}$	(4e)	Ca I
$\mathbf{B_{26}}$	=	$-x_9\,\mathbf{a}_1-y_9\,\mathbf{a}_2+z_9\,\mathbf{a}_3$	=	$-ax_9\,\hat{\mathbf{x}}-by_9\,\hat{\mathbf{y}}+cz_9\,\hat{\mathbf{z}}$	(4e)	Ca I
$\mathbf{B_{27}}$	=	$x_9\,\mathbf{a}_1-y_9\,\mathbf{a}_2+\left(z_9+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_9\,\hat{\mathbf{x}}-by_9\,\hat{\mathbf{y}}+c\left(z_9+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4e)	Ca I
$\mathbf{B_{28}}$	=	$-x_9\,\mathbf{a}_1+y_9\,\mathbf{a}_2+\left(z_9+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_9\,\hat{\mathbf{x}}+by_9\,\hat{\mathbf{y}}+c\left(z_9+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4e)	Ca I

$$
\begin{array}{rcccccc}
\mathbf{B_{29}} & = & x_{10}\,\mathbf{a}_1 + y_{10}\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3 & = & ax_{10}\,\hat{\mathbf{x}} + by_{10}\,\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}} & \text{(4e)} & \text{Ca II} \\
\mathbf{B_{30}} & = & -x_{10}\,\mathbf{a}_1 - y_{10}\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3 & = & -ax_{10}\,\hat{\mathbf{x}} - by_{10}\,\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}} & \text{(4e)} & \text{Ca II} \\
\mathbf{B_{31}} & = & x_{10}\,\mathbf{a}_1 - y_{10}\,\mathbf{a}_2 + \left(z_{10}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{10}\,\hat{\mathbf{x}} - by_{10}\,\hat{\mathbf{y}} + c\left(z_{10}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{Ca II} \\
\mathbf{B_{32}} & = & -x_{10}\,\mathbf{a}_1 + y_{10}\,\mathbf{a}_2 + \left(z_{10}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{10}\,\hat{\mathbf{x}} + by_{10}\,\hat{\mathbf{y}} + c\left(z_{10}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{Ca II} \\
\mathbf{B_{33}} & = & x_{11}\,\mathbf{a}_1 + y_{11}\,\mathbf{a}_2 + z_{11}\,\mathbf{a}_3 & = & ax_{11}\,\hat{\mathbf{x}} + by_{11}\,\hat{\mathbf{y}} + cz_{11}\,\hat{\mathbf{z}} & \text{(4e)} & \text{Ca III} \\
\mathbf{B_{34}} & = & -x_{11}\,\mathbf{a}_1 - y_{11}\,\mathbf{a}_2 + z_{11}\,\mathbf{a}_3 & = & -ax_{11}\,\hat{\mathbf{x}} - by_{11}\,\hat{\mathbf{y}} + cz_{11}\,\hat{\mathbf{z}} & \text{(4e)} & \text{Ca III} \\
\mathbf{B_{35}} & = & x_{11}\,\mathbf{a}_1 - y_{11}\,\mathbf{a}_2 + \left(z_{11}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{11}\,\hat{\mathbf{x}} - by_{11}\,\hat{\mathbf{y}} + c\left(z_{11}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{Ca III} \\
\mathbf{B_{36}} & = & -x_{11}\,\mathbf{a}_1 + y_{11}\,\mathbf{a}_2 + \left(z_{11}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{11}\,\hat{\mathbf{x}} + by_{11}\,\hat{\mathbf{y}} + c\left(z_{11}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{Ca III} \\
\mathbf{B_{37}} & = & x_{12}\,\mathbf{a}_1 + y_{12}\,\mathbf{a}_2 + z_{12}\,\mathbf{a}_3 & = & ax_{12}\,\hat{\mathbf{x}} + by_{12}\,\hat{\mathbf{y}} + cz_{12}\,\hat{\mathbf{z}} & \text{(4e)} & \text{Ca IV} \\
\mathbf{B_{38}} & = & -x_{12}\,\mathbf{a}_1 - y_{12}\,\mathbf{a}_2 + z_{12}\,\mathbf{a}_3 & = & -ax_{12}\,\hat{\mathbf{x}} - by_{12}\,\hat{\mathbf{y}} + cz_{12}\,\hat{\mathbf{z}} & \text{(4e)} & \text{Ca IV} \\
\mathbf{B_{39}} & = & x_{12}\,\mathbf{a}_1 - y_{12}\,\mathbf{a}_2 + \left(z_{12}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{12}\,\hat{\mathbf{x}} - by_{12}\,\hat{\mathbf{y}} + c\left(z_{12}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{Ca IV} \\
\mathbf{B_{40}} & = & -x_{12}\,\mathbf{a}_1 + y_{12}\,\mathbf{a}_2 + \left(z_{12}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{12}\,\hat{\mathbf{x}} + by_{12}\,\hat{\mathbf{y}} + c\left(z_{12}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{Ca IV} \\
\mathbf{B_{41}} & = & x_{13}\,\mathbf{a}_1 + y_{13}\,\mathbf{a}_2 + z_{13}\,\mathbf{a}_3 & = & ax_{13}\,\hat{\mathbf{x}} + by_{13}\,\hat{\mathbf{y}} + cz_{13}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O I} \\
\mathbf{B_{42}} & = & -x_{13}\,\mathbf{a}_1 - y_{13}\,\mathbf{a}_2 + z_{13}\,\mathbf{a}_3 & = & -ax_{13}\,\hat{\mathbf{x}} - by_{13}\,\hat{\mathbf{y}} + cz_{13}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O I} \\
\mathbf{B_{43}} & = & x_{13}\,\mathbf{a}_1 - y_{13}\,\mathbf{a}_2 + \left(z_{13}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{13}\,\hat{\mathbf{x}} - by_{13}\,\hat{\mathbf{y}} + c\left(z_{13}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O I} \\
\mathbf{B_{44}} & = & -x_{13}\,\mathbf{a}_1 + y_{13}\,\mathbf{a}_2 + \left(z_{13}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{13}\,\hat{\mathbf{x}} + by_{13}\,\hat{\mathbf{y}} + c\left(z_{13}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O I} \\
\mathbf{B_{45}} & = & x_{14}\,\mathbf{a}_1 + y_{14}\,\mathbf{a}_2 + z_{14}\,\mathbf{a}_3 & = & ax_{14}\,\hat{\mathbf{x}} + by_{14}\,\hat{\mathbf{y}} + cz_{14}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O II} \\
\mathbf{B_{46}} & = & -x_{14}\,\mathbf{a}_1 - y_{14}\,\mathbf{a}_2 + z_{14}\,\mathbf{a}_3 & = & -ax_{14}\,\hat{\mathbf{x}} - by_{14}\,\hat{\mathbf{y}} + cz_{14}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O II} \\
\mathbf{B_{47}} & = & x_{14}\,\mathbf{a}_1 - y_{14}\,\mathbf{a}_2 + \left(z_{14}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{14}\,\hat{\mathbf{x}} - by_{14}\,\hat{\mathbf{y}} + c\left(z_{14}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O II} \\
\mathbf{B_{48}} & = & -x_{14}\,\mathbf{a}_1 + y_{14}\,\mathbf{a}_2 + \left(z_{14}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{14}\,\hat{\mathbf{x}} + by_{14}\,\hat{\mathbf{y}} + c\left(z_{14}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O II} \\
\mathbf{B_{49}} & = & x_{15}\,\mathbf{a}_1 + y_{15}\,\mathbf{a}_2 + z_{15}\,\mathbf{a}_3 & = & ax_{15}\,\hat{\mathbf{x}} + by_{15}\,\hat{\mathbf{y}} + cz_{15}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O III} \\
\mathbf{B_{50}} & = & -x_{15}\,\mathbf{a}_1 - y_{15}\,\mathbf{a}_2 + z_{15}\,\mathbf{a}_3 & = & -ax_{15}\,\hat{\mathbf{x}} - by_{15}\,\hat{\mathbf{y}} + cz_{15}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O III} \\
\mathbf{B_{51}} & = & x_{15}\,\mathbf{a}_1 - y_{15}\,\mathbf{a}_2 + \left(z_{15}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{15}\,\hat{\mathbf{x}} - by_{15}\,\hat{\mathbf{y}} + c\left(z_{15}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O III} \\
\mathbf{B_{52}} & = & -x_{15}\,\mathbf{a}_1 + y_{15}\,\mathbf{a}_2 + \left(z_{15}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{15}\,\hat{\mathbf{x}} + by_{15}\,\hat{\mathbf{y}} + c\left(z_{15}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O III} \\
\mathbf{B_{53}} & = & x_{16}\,\mathbf{a}_1 + y_{16}\,\mathbf{a}_2 + z_{16}\,\mathbf{a}_3 & = & ax_{16}\,\hat{\mathbf{x}} + by_{16}\,\hat{\mathbf{y}} + cz_{16}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O IV} \\
\mathbf{B_{54}} & = & -x_{16}\,\mathbf{a}_1 - y_{16}\,\mathbf{a}_2 + z_{16}\,\mathbf{a}_3 & = & -ax_{16}\,\hat{\mathbf{x}} - by_{16}\,\hat{\mathbf{y}} + cz_{16}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O IV} \\
\mathbf{B_{55}} & = & x_{16}\,\mathbf{a}_1 - y_{16}\,\mathbf{a}_2 + \left(z_{16}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{16}\,\hat{\mathbf{x}} - by_{16}\,\hat{\mathbf{y}} + c\left(z_{16}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O IV} \\
\mathbf{B_{56}} & = & -x_{16}\,\mathbf{a}_1 + y_{16}\,\mathbf{a}_2 + \left(z_{16}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{16}\,\hat{\mathbf{x}} + by_{16}\,\hat{\mathbf{y}} + c\left(z_{16}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O IV} \\
\mathbf{B_{57}} & = & x_{17}\,\mathbf{a}_1 + y_{17}\,\mathbf{a}_2 + z_{17}\,\mathbf{a}_3 & = & ax_{17}\,\hat{\mathbf{x}} + by_{17}\,\hat{\mathbf{y}} + cz_{17}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O V} \\
\mathbf{B_{58}} & = & -x_{17}\,\mathbf{a}_1 - y_{17}\,\mathbf{a}_2 + z_{17}\,\mathbf{a}_3 & = & -ax_{17}\,\hat{\mathbf{x}} - by_{17}\,\hat{\mathbf{y}} + cz_{17}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O V} \\
\mathbf{B_{59}} & = & x_{17}\,\mathbf{a}_1 - y_{17}\,\mathbf{a}_2 + \left(z_{17}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{17}\,\hat{\mathbf{x}} - by_{17}\,\hat{\mathbf{y}} + c\left(z_{17}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O V} \\
\mathbf{B_{60}} & = & -x_{17}\,\mathbf{a}_1 + y_{17}\,\mathbf{a}_2 + \left(z_{17}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{17}\,\hat{\mathbf{x}} + by_{17}\,\hat{\mathbf{y}} + c\left(z_{17}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O V} \\
\mathbf{B_{61}} & = & x_{18}\,\mathbf{a}_1 + y_{18}\,\mathbf{a}_2 + z_{18}\,\mathbf{a}_3 & = & ax_{18}\,\hat{\mathbf{x}} + by_{18}\,\hat{\mathbf{y}} + cz_{18}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O VI} \\
\mathbf{B_{62}} & = & -x_{18}\,\mathbf{a}_1 - y_{18}\,\mathbf{a}_2 + z_{18}\,\mathbf{a}_3 & = & -ax_{18}\,\hat{\mathbf{x}} - by_{18}\,\hat{\mathbf{y}} + cz_{18}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O VI} \\
\mathbf{B_{63}} & = & x_{18}\,\mathbf{a}_1 - y_{18}\,\mathbf{a}_2 + \left(z_{18}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{18}\,\hat{\mathbf{x}} - by_{18}\,\hat{\mathbf{y}} + c\left(z_{18}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O VI} \\
\mathbf{B_{64}} & = & -x_{18}\,\mathbf{a}_1 + y_{18}\,\mathbf{a}_2 + \left(z_{18}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{18}\,\hat{\mathbf{x}} + by_{18}\,\hat{\mathbf{y}} + c\left(z_{18}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O VI} \\
\mathbf{B_{65}} & = & x_{19}\,\mathbf{a}_1 + y_{19}\,\mathbf{a}_2 + z_{19}\,\mathbf{a}_3 & = & ax_{19}\,\hat{\mathbf{x}} + by_{19}\,\hat{\mathbf{y}} + cz_{19}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O VII} \\
\mathbf{B_{66}} & = & -x_{19}\,\mathbf{a}_1 - y_{19}\,\mathbf{a}_2 + z_{19}\,\mathbf{a}_3 & = & -ax_{19}\,\hat{\mathbf{x}} - by_{19}\,\hat{\mathbf{y}} + cz_{19}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O VII} \\
\mathbf{B_{67}} & = & x_{19}\,\mathbf{a}_1 - y_{19}\,\mathbf{a}_2 + \left(z_{19}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{19}\,\hat{\mathbf{x}} - by_{19}\,\hat{\mathbf{y}} + c\left(z_{19}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O VII} \\
\mathbf{B_{68}} & = & -x_{19}\,\mathbf{a}_1 + y_{19}\,\mathbf{a}_2 + \left(z_{19}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{19}\,\hat{\mathbf{x}} + by_{19}\,\hat{\mathbf{y}} + c\left(z_{19}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O VII} \\
\mathbf{B_{69}} & = & x_{20}\,\mathbf{a}_1 + y_{20}\,\mathbf{a}_2 + z_{20}\,\mathbf{a}_3 & = & ax_{20}\,\hat{\mathbf{x}} + by_{20}\,\hat{\mathbf{y}} + cz_{20}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O VIII}
\end{array}
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\begin{array}{rcccccc}
\mathbf{B_{70}} & = & -x_{20}\,\mathbf{a}_1 - y_{20}\,\mathbf{a}_2 + z_{20}\,\mathbf{a}_3 & = & -ax_{20}\,\hat{\mathbf{x}} - by_{20}\,\hat{\mathbf{y}} + cz_{20}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O VIII} \\
\mathbf{B_{71}} & = & x_{20}\,\mathbf{a}_1 - y_{20}\,\mathbf{a}_2 + \left(z_{20}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{20}\,\hat{\mathbf{x}} - by_{20}\,\hat{\mathbf{y}} + c\left(z_{20}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O VIII} \\
\mathbf{B_{72}} & = & -x_{20}\,\mathbf{a}_1 + y_{20}\,\mathbf{a}_2 + \left(z_{20}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{20}\,\hat{\mathbf{x}} + by_{20}\,\hat{\mathbf{y}} + c\left(z_{20}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O VIII} \\
\mathbf{B_{73}} & = & x_{21}\,\mathbf{a}_1 + y_{21}\,\mathbf{a}_2 + z_{21}\,\mathbf{a}_3 & = & ax_{21}\,\hat{\mathbf{x}} + by_{21}\,\hat{\mathbf{y}} + cz_{21}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O IX} \\
\mathbf{B_{74}} & = & -x_{21}\,\mathbf{a}_1 - y_{21}\,\mathbf{a}_2 + z_{21}\,\mathbf{a}_3 & = & -ax_{21}\,\hat{\mathbf{x}} - by_{21}\,\hat{\mathbf{y}} + cz_{21}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O IX} \\
\mathbf{B_{75}} & = & x_{21}\,\mathbf{a}_1 - y_{21}\,\mathbf{a}_2 + \left(z_{21}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{21}\,\hat{\mathbf{x}} - by_{21}\,\hat{\mathbf{y}} + c\left(z_{21}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O IX} \\
\mathbf{B_{76}} & = & -x_{21}\,\mathbf{a}_1 + y_{21}\,\mathbf{a}_2 + \left(z_{21}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{21}\,\hat{\mathbf{x}} + by_{21}\,\hat{\mathbf{y}} + c\left(z_{21}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O IX} \\
\mathbf{B_{77}} & = & x_{22}\,\mathbf{a}_1 + y_{22}\,\mathbf{a}_2 + z_{22}\,\mathbf{a}_3 & = & ax_{22}\,\hat{\mathbf{x}} + by_{22}\,\hat{\mathbf{y}} + cz_{22}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O X} \\
\mathbf{B_{78}} & = & -x_{22}\,\mathbf{a}_1 - y_{22}\,\mathbf{a}_2 + z_{22}\,\mathbf{a}_3 & = & -ax_{22}\,\hat{\mathbf{x}} - by_{22}\,\hat{\mathbf{y}} + cz_{22}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O X} \\
\mathbf{B_{79}} & = & x_{22}\,\mathbf{a}_1 - y_{22}\,\mathbf{a}_2 + \left(z_{22}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{22}\,\hat{\mathbf{x}} - by_{22}\,\hat{\mathbf{y}} + c\left(z_{22}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O X} \\
\mathbf{B_{80}} & = & -x_{22}\,\mathbf{a}_1 + y_{22}\,\mathbf{a}_2 + \left(z_{22}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{22}\,\hat{\mathbf{x}} + by_{22}\,\hat{\mathbf{y}} + c\left(z_{22}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O X} \\
\mathbf{B_{81}} & = & x_{23}\,\mathbf{a}_1 + y_{23}\,\mathbf{a}_2 + z_{23}\,\mathbf{a}_3 & = & ax_{23}\,\hat{\mathbf{x}} + by_{23}\,\hat{\mathbf{y}} + cz_{23}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XI} \\
\mathbf{B_{82}} & = & -x_{23}\,\mathbf{a}_1 - y_{23}\,\mathbf{a}_2 + z_{23}\,\mathbf{a}_3 & = & -ax_{23}\,\hat{\mathbf{x}} - by_{23}\,\hat{\mathbf{y}} + cz_{23}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XI} \\
\mathbf{B_{83}} & = & x_{23}\,\mathbf{a}_1 - y_{23}\,\mathbf{a}_2 + \left(z_{23}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{23}\,\hat{\mathbf{x}} - by_{23}\,\hat{\mathbf{y}} + c\left(z_{23}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XI} \\
\mathbf{B_{84}} & = & -x_{23}\,\mathbf{a}_1 + y_{23}\,\mathbf{a}_2 + \left(z_{23}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{23}\,\hat{\mathbf{x}} + by_{23}\,\hat{\mathbf{y}} + c\left(z_{23}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XI} \\
\mathbf{B_{85}} & = & x_{24}\,\mathbf{a}_1 + y_{24}\,\mathbf{a}_2 + z_{24}\,\mathbf{a}_3 & = & ax_{24}\,\hat{\mathbf{x}} + by_{24}\,\hat{\mathbf{y}} + cz_{24}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XII} \\
\mathbf{B_{86}} & = & -x_{24}\,\mathbf{a}_1 - y_{24}\,\mathbf{a}_2 + z_{24}\,\mathbf{a}_3 & = & -ax_{24}\,\hat{\mathbf{x}} - by_{24}\,\hat{\mathbf{y}} + cz_{24}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XII} \\
\mathbf{B_{87}} & = & x_{24}\,\mathbf{a}_1 - y_{24}\,\mathbf{a}_2 + \left(z_{24}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{24}\,\hat{\mathbf{x}} - by_{24}\,\hat{\mathbf{y}} + c\left(z_{24}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XII} \\
\mathbf{B_{88}} & = & -x_{24}\,\mathbf{a}_1 + y_{24}\,\mathbf{a}_2 + \left(z_{24}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{24}\,\hat{\mathbf{x}} + by_{24}\,\hat{\mathbf{y}} + c\left(z_{24}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XII} \\
\mathbf{B_{89}} & = & x_{25}\,\mathbf{a}_1 + y_{25}\,\mathbf{a}_2 + z_{25}\,\mathbf{a}_3 & = & ax_{25}\,\hat{\mathbf{x}} + by_{25}\,\hat{\mathbf{y}} + cz_{25}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XIII} \\
\mathbf{B_{90}} & = & -x_{25}\,\mathbf{a}_1 - y_{25}\,\mathbf{a}_2 + z_{25}\,\mathbf{a}_3 & = & -ax_{25}\,\hat{\mathbf{x}} - by_{25}\,\hat{\mathbf{y}} + cz_{25}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XIII} \\
\mathbf{B_{91}} & = & x_{25}\,\mathbf{a}_1 - y_{25}\,\mathbf{a}_2 + \left(z_{25}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{25}\,\hat{\mathbf{x}} - by_{25}\,\hat{\mathbf{y}} + c\left(z_{25}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XIII} \\
\mathbf{B_{92}} & = & -x_{25}\,\mathbf{a}_1 + y_{25}\,\mathbf{a}_2 + \left(z_{25}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{25}\,\hat{\mathbf{x}} + by_{25}\,\hat{\mathbf{y}} + c\left(z_{25}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XIII} \\
\mathbf{B_{93}} & = & x_{26}\,\mathbf{a}_1 + y_{26}\,\mathbf{a}_2 + z_{26}\,\mathbf{a}_3 & = & ax_{26}\,\hat{\mathbf{x}} + by_{26}\,\hat{\mathbf{y}} + cz_{26}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XIV} \\
\mathbf{B_{94}} & = & -x_{26}\,\mathbf{a}_1 - y_{26}\,\mathbf{a}_2 + z_{26}\,\mathbf{a}_3 & = & -ax_{26}\,\hat{\mathbf{x}} - by_{26}\,\hat{\mathbf{y}} + cz_{26}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XIV} \\
\mathbf{B_{95}} & = & x_{26}\,\mathbf{a}_1 - y_{26}\,\mathbf{a}_2 + \left(z_{26}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{26}\,\hat{\mathbf{x}} - by_{26}\,\hat{\mathbf{y}} + c\left(z_{26}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XIV} \\
\mathbf{B_{96}} & = & -x_{26}\,\mathbf{a}_1 + y_{26}\,\mathbf{a}_2 + \left(z_{26}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{26}\,\hat{\mathbf{x}} + by_{26}\,\hat{\mathbf{y}} + c\left(z_{26}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XIV} \\
\mathbf{B_{97}} & = & x_{27}\,\mathbf{a}_1 + y_{27}\,\mathbf{a}_2 + z_{27}\,\mathbf{a}_3 & = & ax_{27}\,\hat{\mathbf{x}} + by_{27}\,\hat{\mathbf{y}} + cz_{27}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XV} \\
\mathbf{B_{98}} & = & -x_{27}\,\mathbf{a}_1 - y_{27}\,\mathbf{a}_2 + z_{27}\,\mathbf{a}_3 & = & -ax_{27}\,\hat{\mathbf{x}} - by_{27}\,\hat{\mathbf{y}} + cz_{27}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XV} \\
\mathbf{B_{99}} & = & x_{27}\,\mathbf{a}_1 - y_{27}\,\mathbf{a}_2 + \left(z_{27}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{27}\,\hat{\mathbf{x}} - by_{27}\,\hat{\mathbf{y}} + c\left(z_{27}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XV} \\
\mathbf{B_{100}} & = & -x_{27}\,\mathbf{a}_1 + y_{27}\,\mathbf{a}_2 + \left(z_{27}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{27}\,\hat{\mathbf{x}} + by_{27}\,\hat{\mathbf{y}} + c\left(z_{27}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XV} \\
\mathbf{B_{101}} & = & x_{28}\,\mathbf{a}_1 + y_{28}\,\mathbf{a}_2 + z_{28}\,\mathbf{a}_3 & = & ax_{28}\,\hat{\mathbf{x}} + by_{28}\,\hat{\mathbf{y}} + cz_{28}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XVI} \\
\mathbf{B_{102}} & = & -x_{28}\,\mathbf{a}_1 - y_{28}\,\mathbf{a}_2 + z_{28}\,\mathbf{a}_3 & = & -ax_{28}\,\hat{\mathbf{x}} - by_{28}\,\hat{\mathbf{y}} + cz_{28}\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XVI} \\
\mathbf{B_{103}} & = & x_{28}\,\mathbf{a}_1 - y_{28}\,\mathbf{a}_2 + \left(z_{28}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{28}\,\hat{\mathbf{x}} - by_{28}\,\hat{\mathbf{y}} + c\left(z_{28}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XVI} \\
\mathbf{B_{104}} & = & -x_{28}\,\mathbf{a}_1 + y_{28}\,\mathbf{a}_2 + \left(z_{28}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{28}\,\hat{\mathbf{x}} + by_{28}\,\hat{\mathbf{y}} + c\left(z_{28}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{O XVI} \\
\mathbf{B_{105}} & = & x_{29}\,\mathbf{a}_1 + y_{29}\,\mathbf{a}_2 + z_{29}\,\mathbf{a}_3 & = & ax_{29}\,\hat{\mathbf{x}} + by_{29}\,\hat{\mathbf{y}} + cz_{29}\,\hat{\mathbf{z}} & \text{(4e)} & \text{S I} \\
\mathbf{B_{106}} & = & -x_{29}\,\mathbf{a}_1 - y_{29}\,\mathbf{a}_2 + z_{29}\,\mathbf{a}_3 & = & -ax_{29}\,\hat{\mathbf{x}} - by_{29}\,\hat{\mathbf{y}} + cz_{29}\,\hat{\mathbf{z}} & \text{(4e)} & \text{S I} \\
\mathbf{B_{107}} & = & x_{29}\,\mathbf{a}_1 - y_{29}\,\mathbf{a}_2 + \left(z_{29}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & ax_{29}\,\hat{\mathbf{x}} - by_{29}\,\hat{\mathbf{y}} + c\left(z_{29}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{S I} \\
\mathbf{B_{108}} & = & -x_{29}\,\mathbf{a}_1 + y_{29}\,\mathbf{a}_2 + \left(z_{29}+\tfrac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_{29}\,\hat{\mathbf{x}} + by_{29}\,\hat{\mathbf{y}} + c\left(z_{29}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} & \text{(4e)} & \text{S I}
\end{array}
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