

$P1$

No. 1

 $P1$
 C_1^1
Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$
General position

 Multiplicity,
 Wyckoff letter,
 Site symmetry

Coordinates

 1 a 1

 (1) x, y, z
I Maximal translationengleiche subgroups

none

II Maximal klassengleiche subgroups

 • **Enlarged unit cell**

[2] $\mathbf{a}' = 2\mathbf{a}$	$P1$ (1)	$\langle 1 \rangle$	$2\mathbf{a}, \mathbf{b}, \mathbf{c}$
[2] $\mathbf{b}' = 2\mathbf{b}$	$P1$ (1)	$\langle 1 \rangle$	$\mathbf{a}, 2\mathbf{b}, \mathbf{c}$
[2] $\mathbf{c}' = 2\mathbf{c}$	$P1$ (1)	$\langle 1 \rangle$	$\mathbf{a}, \mathbf{b}, 2\mathbf{c}$
[2] $\mathbf{b}' = 2\mathbf{b}, \mathbf{c}' = 2\mathbf{c}$	$A1$ (1, $P1$)	$\langle 1 \rangle$	$\mathbf{a}, 2\mathbf{b}, \mathbf{b} + \mathbf{c}$
[2] $\mathbf{a}' = 2\mathbf{a}, \mathbf{c}' = 2\mathbf{c}$	$B1$ (1, $P1$)	$\langle 1 \rangle$	$2\mathbf{a}, \mathbf{b}, \mathbf{a} + \mathbf{c}$
[2] $\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$	$C1$ (1, $P1$)	$\langle 1 \rangle$	$2\mathbf{a}, \mathbf{a} + \mathbf{b}, \mathbf{c}$
[2] $\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}, \mathbf{c}' = 2\mathbf{c}$	$F1$ (1, $P1$)	$\langle 1 \rangle$	$2\mathbf{a}, \mathbf{a} + \mathbf{b}, \mathbf{a} + \mathbf{c}$
[3] $\mathbf{a}' = 3\mathbf{a}$	$P1$ (1)	$\langle 1 \rangle$	$3\mathbf{a}, \mathbf{b}, \mathbf{c}$
[3] $\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = \mathbf{a} + \mathbf{b}$	$P1$ (1)	$\langle 1 \rangle$	$3\mathbf{a}, \mathbf{a} + \mathbf{b}, \mathbf{c}$
[3] $\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 2\mathbf{a} + \mathbf{b}$	$P1$ (1)	$\langle 1 \rangle$	$3\mathbf{a}, 2\mathbf{a} + \mathbf{b}, \mathbf{c}$
[3] $\mathbf{a}' = 3\mathbf{a}, \mathbf{c}' = \mathbf{a} + \mathbf{c}$	$P1$ (1)	$\langle 1 \rangle$	$3\mathbf{a}, \mathbf{b}, \mathbf{a} + \mathbf{c}$
[3] $\mathbf{a}' = 3\mathbf{a}, \mathbf{c}' = 2\mathbf{a} + \mathbf{c}$	$P1$ (1)	$\langle 1 \rangle$	$3\mathbf{a}, \mathbf{b}, 2\mathbf{a} + \mathbf{c}$
[3] $\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = \mathbf{a} + \mathbf{b}, \mathbf{c}' = \mathbf{a} + \mathbf{c}$	$P1$ (1)	$\langle 1 \rangle$	$3\mathbf{a}, \mathbf{a} + \mathbf{b}, \mathbf{a} + \mathbf{c}$
[3] $\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 2\mathbf{a} + \mathbf{b}, \mathbf{c}' = \mathbf{a} + \mathbf{c}$	$P1$ (1)	$\langle 1 \rangle$	$3\mathbf{a}, 2\mathbf{a} + \mathbf{b}, \mathbf{a} + \mathbf{c}$
[3] $\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = \mathbf{a} + \mathbf{b}, \mathbf{c}' = 2\mathbf{a} + \mathbf{c}$	$P1$ (1)	$\langle 1 \rangle$	$3\mathbf{a}, \mathbf{a} + \mathbf{b}, 2\mathbf{a} + \mathbf{c}$
[3] $\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 2\mathbf{a} + \mathbf{b}, \mathbf{c}' = 2\mathbf{a} + \mathbf{c}$	$P1$ (1)	$\langle 1 \rangle$	$3\mathbf{a}, 2\mathbf{a} + \mathbf{b}, 2\mathbf{a} + \mathbf{c}$
[3] $\mathbf{b}' = 3\mathbf{b}$	$P1$ (1)	$\langle 1 \rangle$	$\mathbf{a}, 3\mathbf{b}, \mathbf{c}$
[3] $\mathbf{b}' = 3\mathbf{b}, \mathbf{c}' = \mathbf{b} + \mathbf{c}$	$P1$ (1)	$\langle 1 \rangle$	$\mathbf{a}, 3\mathbf{b}, \mathbf{b} + \mathbf{c}$
[3] $\mathbf{b}' = 3\mathbf{b}, \mathbf{c}' = 2\mathbf{b} + \mathbf{c}$	$P1$ (1)	$\langle 1 \rangle$	$\mathbf{a}, 3\mathbf{b}, 2\mathbf{b} + \mathbf{c}$
[3] $\mathbf{c}' = 3\mathbf{c}$	$P1$ (1)	$\langle 1 \rangle$	$\mathbf{a}, \mathbf{b}, 3\mathbf{c}$

• **Series of maximal isomorphic subgroups**

[p] $\mathbf{a}' = p\mathbf{a}, \mathbf{b}' = q\mathbf{a} + \mathbf{b}, \mathbf{c}' = r\mathbf{a} + \mathbf{c}$

P1 (1)

$\langle 1 \rangle$

$p > 1; 0 \leq q < p; 0 \leq r < p$
no conjugate subgroups

$p\mathbf{a}, q\mathbf{a} + \mathbf{b}, r\mathbf{a} + \mathbf{c}$

[p] $\mathbf{b}' = p\mathbf{b}, \mathbf{c}' = q\mathbf{b} + \mathbf{c}$

P1 (1)

$\langle 1 \rangle$

$p > 1; 0 \leq q < p$

no conjugate subgroups

$\mathbf{a}, p\mathbf{b}, q\mathbf{b} + \mathbf{c}$

[p] $\mathbf{c}' = p\mathbf{c}$

P1 (1)

$\langle 1 \rangle$

$p > 1$

no conjugate subgroups

$\mathbf{a}, \mathbf{b}, p\mathbf{c}$

I Minimal translationengleiche supergroups

[2] $P\bar{1}$ (2); [2] $P121$ (3); [2] $P112$ (3); [2] $P12_11$ (4); [2] $P112_1$ (4); [2] $C121$ (5); [2] $A112$ (5); [2] $P1m1$ (6); [2] $P11m$ (6); [2] $P1c1$ (7); [2] $P11a$ (7); [2] $C1m1$ (8); [2] $A11m$ (8); [2] $C1c1$ (9); [2] $A11a$ (9); [3] $P3$ (143); [3] $P3_1$ (144); [3] $P3_2$ (145); [3] $R3$ (146)

II Minimal non-isomorphic klassengleiche supergroups

none