

C_s^2
 $P1c1$

No. 7

 Pc

 UNIQUE AXIS b , CELL CHOICE 1

Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; (2)

General position

 Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

 2 a 1

 (1) x, y, z (2) $x, \bar{y}, z + \frac{1}{2}$
I Maximal translationengleiche subgroups

 [2] $P1$ (1) 1

II Maximal klassengleiche subgroups

• Enlarged unit cell

[2] $\mathbf{b}' = 2\mathbf{b}$			
$P1c1$ (7)	$\langle 2 \rangle$	$\mathbf{a}, 2\mathbf{b}, \mathbf{c}$	
$P1c1$ (7)	$\langle 2 + (0, 1, 0) \rangle$	$\mathbf{a}, 2\mathbf{b}, \mathbf{c}$	0, 1/2, 0
[2] $\mathbf{a}' = 2\mathbf{a}$			
$P1c1$ (7)	$\langle 2 \rangle$	$2\mathbf{a}, \mathbf{b}, \mathbf{c}$	
$P1n1$ (7, $P1c1$)	$\langle 2 + (1, 0, 0) \rangle$	$2\mathbf{a}, \mathbf{b}, -2\mathbf{a} + \mathbf{c}$	
[2] $\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$			
$C1c1$ (9)	$\langle 2 \rangle$	$2\mathbf{a}, 2\mathbf{b}, \mathbf{c}$	
$C1c1$ (9)	$\langle 2 + (0, 1, 0) \rangle$	$2\mathbf{a}, 2\mathbf{b}, \mathbf{c}$	0, 1/2, 0
[3] $\mathbf{b}' = 3\mathbf{b}$			
$P1c1$ (7)	$\langle 2 \rangle$	$\mathbf{a}, 3\mathbf{b}, \mathbf{c}$	
$P1c1$ (7)	$\langle 2 + (0, 2, 0) \rangle$	$\mathbf{a}, 3\mathbf{b}, \mathbf{c}$	0, 1, 0
$P1c1$ (7)	$\langle 2 + (0, 4, 0) \rangle$	$\mathbf{a}, 3\mathbf{b}, \mathbf{c}$	0, 2, 0
[3] $\mathbf{c}' = 3\mathbf{c}$			
$P1c1$ (7)	$\langle 2 + (0, 0, 1) \rangle$	$\mathbf{a}, \mathbf{b}, 3\mathbf{c}$	
[3] $\mathbf{a}' = 3\mathbf{a}$			
$P1c1$ (7)	$\langle 2 \rangle$	$3\mathbf{a}, \mathbf{b}, \mathbf{c}$	
[3] $\mathbf{a}' = 3\mathbf{a}, \mathbf{c}' = -2\mathbf{a} + \mathbf{c}$			
$P1c1$ (7)	$\langle 2 + (-1, 0, 0) \rangle$	$3\mathbf{a}, \mathbf{b}, -2\mathbf{a} + \mathbf{c}$	
[3] $\mathbf{a}' = 3\mathbf{a}, \mathbf{c}' = -4\mathbf{a} + \mathbf{c}$			
$P1c1$ (7)	$\langle 2 + (-2, 0, 0) \rangle$	$3\mathbf{a}, \mathbf{b}, -4\mathbf{a} + \mathbf{c}$	

• Series of maximal isomorphic subgroups

[p] $\mathbf{b}' = p\mathbf{b}$			
$P1c1$ (7)	$\langle 2 + (0, 2u, 0) \rangle$ prime $p > 2$; $0 \leq u < p$ p conjugate subgroups	$\mathbf{a}, p\mathbf{b}, \mathbf{c}$	0, u , 0
[p] $\mathbf{c}' = p\mathbf{c}$			
$P1c1$ (7)	$\langle 2 + (0, 0, \frac{p}{2} - \frac{1}{2}) \rangle$ prime $p > 2$ no conjugate subgroups	$\mathbf{a}, \mathbf{b}, p\mathbf{c}$	
[p] $\mathbf{a}' = p\mathbf{a}, \mathbf{c}' = -2q\mathbf{a} + \mathbf{c}$			
$P1c1$ (7)	$\langle 2 + (-q, 0, 0) \rangle$ p prime; $0 \leq q < p$ no conjugate subgroups	$p\mathbf{a}, \mathbf{b}, -2q\mathbf{a} + \mathbf{c}$	

I Minimal translationengleiche supergroups

 [2] $P12/c1$ (13); [2] $P12_1/c1$ (14); [2] $Pmc2_1$ (26); [2] $Pcc2$ (27); [2] $Pma2$ (28); [2] $Pca2_1$ (29); [2] $Pnc2$ (30); [2] $Pmn2_1$ (31);
[2] $Pba2$ (32); [2] $Pna2_1$ (33); [2] $Pnn2$ (34); [2] $Aem2$ (39); [2] $Aea2$ (41)

II Minimal non-isomorphic klassengleiche supergroups

• Additional centring translations

 [2] $A1m1$ (8, $C1m1$); [2] $C1c1$ (9); [2] $I1c1$ (9, $C1c1$)

• Decreased unit cell

 [2] $\mathbf{c}' = \frac{1}{2}\mathbf{c}$ $P1m1$ (6)

UNIQUE AXIS *c*, CELL CHOICE 1

Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; (2)

General position

Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

2 *a* 1

(1) x,y,z (2) $x + \frac{1}{2}, y, \bar{z}$

I Maximal translationengleiche subgroups

[2] *P1* (1) 1

II Maximal klassengleiche subgroups

• **Enlarged unit cell**

[2] $\mathbf{c}' = 2\mathbf{c}$			
<i>P11a</i> (7)	$\langle 2 \rangle$	a, b, 2c	
<i>P11a</i> (7)	$\langle 2 + (0,0,1) \rangle$	a, b, 2c	0,0,1/2
[2] $\mathbf{b}' = 2\mathbf{b}$			
<i>P11a</i> (7)	$\langle 2 \rangle$	a, 2b, c	
<i>P11n</i> (7, <i>P11a</i>)	$\langle 2 + (0,1,0) \rangle$	a - 2b, 2b, c	
[2] $\mathbf{b}' = 2\mathbf{b}, \mathbf{c}' = 2\mathbf{c}$			
<i>A11a</i> (9)	$\langle 2 \rangle$	a, 2b, 2c	
<i>A11a</i> (9)	$\langle 2 + (0,0,1) \rangle$	a, 2b, 2c	0,0,1/2
[3] $\mathbf{c}' = 3\mathbf{c}$			
$\left\{ \begin{array}{l} \textit{P11a} (7) \\ \textit{P11a} (7) \\ \textit{P11a} (7) \end{array} \right.$	$\left\{ \begin{array}{l} \langle 2 \rangle \\ \langle 2 + (0,0,2) \rangle \\ \langle 2 + (0,0,4) \rangle \end{array} \right.$	a, b, 3c	
		a, b, 3c	0,0,1
		a, b, 3c	0,0,2
[3] $\mathbf{a}' = 3\mathbf{a}$			
<i>P11a</i> (7)	$\langle 2 + (1,0,0) \rangle$	3a, b, c	
[3] $\mathbf{b}' = 3\mathbf{b}$			
<i>P11a</i> (7)	$\langle 2 \rangle$	a, 3b, c	
[3] $\mathbf{a}' = \mathbf{a} - 2\mathbf{b}, \mathbf{b}' = 3\mathbf{b}$			
<i>P11a</i> (7)	$\langle 2 + (0,-1,0) \rangle$	a - 2b, 3b, c	
[3] $\mathbf{a}' = \mathbf{a} - 4\mathbf{b}, \mathbf{b}' = 3\mathbf{b}$			
<i>P11a</i> (7)	$\langle 2 + (0,-2,0) \rangle$	a - 4b, 3b, c	
• Series of maximal isomorphic subgroups			
[<i>p</i>] $\mathbf{c}' = p\mathbf{c}$			
<i>P11a</i> (7)	$\langle 2 + (0,0,2u) \rangle$ prime $p > 2$; $0 \leq u < p$ <i>p</i> conjugate subgroups	a, b, pc	0,0, <i>u</i>
[<i>p</i>] $\mathbf{a}' = p\mathbf{a}$			
<i>P11a</i> (7)	$\langle 2 + (\frac{p}{2} - \frac{1}{2}, 0, 0) \rangle$ prime $p > 2$ no conjugate subgroups	pa, b, c	
[<i>p</i>] $\mathbf{a}' = \mathbf{a} - 2q\mathbf{b}, \mathbf{b}' = p\mathbf{b}$			
<i>P11a</i> (7)	$\langle 2 + (0,-q,0) \rangle$ <i>p</i> prime; $0 \leq q < p$ no conjugate subgroups	a - 2qb, pb, c	

I Minimal translationengleiche supergroups

[2] *P112/a* (13); [2] *P112₁/a* (14); [2] *Pmc2₁* (26); [2] *Pcc2* (27); [2] *Pma2* (28); [2] *Pca2₁* (29); [2] *Pnc2* (30); [2] *Pmn2₁* (31); [2] *Pba2* (32); [2] *Pna2₁* (33); [2] *Pnn2* (34); [2] *Aem2* (39); [2] *Aea2* (41)

II Minimal non-isomorphic klassengleiche supergroups

• **Additional centring translations**

[2] *B11m* (8, *A11m*); [2] *A11a* (9); [2] *I11a* (9, *A11a*)

• **Decreased unit cell**

[2] $\mathbf{a}' = \frac{1}{2}\mathbf{a}$ *P11m* (6)