

$P2_12_12_1$

No. 19

 $P2_12_12_1$
 D_2^4

 Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; (2); (3)

General position

 Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

 4 a 1 (1) x, y, z (2) $\bar{x} + \frac{1}{2}, \bar{y}, z + \frac{1}{2}$ (3) $\bar{x}, y + \frac{1}{2}, \bar{z} + \frac{1}{2}$ (4) $x + \frac{1}{2}, \bar{y} + \frac{1}{2}, \bar{z}$
I Maximal translationengleiche subgroups

[2] $P112_1$ (4)	1; 2		$1/4, 0, 0$
[2] $P12_11$ (4)	1; 3		$0, 0, 1/4$
[2] $P2_111$ (4, $P12_11$)	1; 4	c, a, b	$0, 1/4, 0$

II Maximal klassengleiche subgroups

• Enlarged unit cell

[3] $\mathbf{a}' = 3\mathbf{a}$			
$\left\{ \begin{array}{l} P2_12_12_1 (19) \\ P2_12_12_1 (19) \\ P2_12_12_1 (19) \end{array} \right.$	$\langle 3; 2 + (1, 0, 0) \rangle$ $\langle 2 + (3, 0, 0); 3 + (2, 0, 0) \rangle$ $\langle 2 + (5, 0, 0); 3 + (4, 0, 0) \rangle$	3a, b, c 3a, b, c 3a, b, c	$1, 0, 0$ $2, 0, 0$
[3] $\mathbf{b}' = 3\mathbf{b}$			
$\left\{ \begin{array}{l} P2_12_12_1 (19) \\ P2_12_12_1 (19) \\ P2_12_12_1 (19) \end{array} \right.$	$\langle 2; 3 + (0, 1, 0) \rangle$ $\langle 2 + (0, 2, 0); 3 + (0, 1, 0) \rangle$ $\langle 2 + (0, 4, 0); 3 + (0, 1, 0) \rangle$	a, 3b, c a, 3b, c a, 3b, c	$0, 1, 0$ $0, 2, 0$
[3] $\mathbf{c}' = 3\mathbf{c}$			
$\left\{ \begin{array}{l} P2_12_12_1 (19) \\ P2_12_12_1 (19) \\ P2_12_12_1 (19) \end{array} \right.$	$\langle (2; 3) + (0, 0, 1) \rangle$ $\langle 2 + (0, 0, 1); 3 + (0, 0, 3) \rangle$ $\langle 2 + (0, 0, 1); 3 + (0, 0, 5) \rangle$	a, b, 3c a, b, 3c a, b, 3c	$0, 0, 1$ $0, 0, 2$

• Series of maximal isomorphic subgroups

[p] $\mathbf{a}' = p\mathbf{a}$			
$P2_12_12_1 (19)$	$\langle 2 + (\frac{p}{2} - \frac{1}{2} + 2u, 0, 0); 3 + (2u, 0, 0) \rangle$ $p > 2; 0 \leq u < p$ p conjugate subgroups for the prime p	pa, b, c	$u, 0, 0$
[p] $\mathbf{b}' = p\mathbf{b}$			
$P2_12_12_1 (19)$	$\langle 2 + (0, 2u, 0); 3 + (0, \frac{p}{2} - \frac{1}{2}, 0) \rangle$ $p > 2; 0 \leq u < p$ p conjugate subgroups for the prime p	a, pb, c	$0, u, 0$
[p] $\mathbf{c}' = p\mathbf{c}$			
$P2_12_12_1 (19)$	$\langle 2 + (0, 0, \frac{p}{2} - \frac{1}{2}); 3 + (0, 0, \frac{p}{2} - \frac{1}{2} + 2u) \rangle$ $p > 2; 0 \leq u < p$ p conjugate subgroups for the prime p	a, b, pc	$0, 0, u$

I Minimal translationengleiche supergroups

 [2] $Pbca$ (61); [2] $Pnma$ (62); [2] $P4_12_12$ (92); [2] $P4_32_12$ (96); [3] $P2_13$ (198)

II Minimal non-isomorphic klassengleiche supergroups

• Additional centring translations

 [2] $A2_122$ (20, $C222_1$); [2] $B22_12$ (20, $C222_1$); [2] $C222_1$ (20); [2] $I2_12_12_1$ (24)

• Decreased unit cell

 [2] $\mathbf{a}' = \frac{1}{2}\mathbf{a}$ $P22_12_1$ (18, $P2_12_12$); [2] $\mathbf{b}' = \frac{1}{2}\mathbf{b}$ $P2_122_1$ (18, $P2_12_12$); [2] $\mathbf{c}' = \frac{1}{2}\mathbf{c}$ $P2_12_12$ (18)