

$Pbcn$

No. 60

 $P2_1/b2/c2_1/n$
 D_{2h}^{14}
Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; (2); (3); (5)

General position

 Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

8	<i>d</i>	1	(1) x, y, z	(2) $\bar{x} + \frac{1}{2}, \bar{y} + \frac{1}{2}, z + \frac{1}{2}$	(3) $\bar{x}, y, \bar{z} + \frac{1}{2}$	(4) $x + \frac{1}{2}, \bar{y} + \frac{1}{2}, \bar{z}$
			(5) $\bar{x}, \bar{y}, \bar{z}$	(6) $x + \frac{1}{2}, y + \frac{1}{2}, \bar{z} + \frac{1}{2}$	(7) $x, \bar{y}, z + \frac{1}{2}$	(8) $\bar{x} + \frac{1}{2}, y + \frac{1}{2}, z$

I Maximal translationengleiche subgroups

[2] $P2_1cn$ (33, $Pna2_1$)	1; 4; 6; 7	c, b, -a	0, 1/4, 0
[2] $Pb2n$ (30, $Pnc2$)	1; 3; 6; 8	c, a, b	0, 0, 1/4
[2] $Pbc2_1$ (29, $Pca2_1$)	1; 2; 7; 8	-b, a, c	1/4, 1/4, 0
[2] $P2_122_1$ (18, $P2_12_12$)	1; 2; 3; 4	c, a, b	0, 1/4, 1/4
[2] $P112_1/n$ (14, $P112_1/a$)	1; 2; 5; 6	-a - b, a, c	
[2] $P2_1/b11$ (14, $P12_1/c1$)	1; 4; 5; 8	c, a, b	
[2] $P12/c1$ (13)	1; 3; 5; 7		

II Maximal klassengleiche subgroups

• Enlarged unit cell

[3] $\mathbf{a}' = 3\mathbf{a}$			
$\left\{ \begin{array}{l} Pbcn \text{ (60)} \\ Pbcn \text{ (60)} \\ Pbcn \text{ (60)} \end{array} \right.$	$\langle 3; 5; 2 + (1, 0, 0) \rangle$ $\langle 2 + (3, 0, 0); (3; 5) + (2, 0, 0) \rangle$ $\langle 2 + (5, 0, 0); (3; 5) + (4, 0, 0) \rangle$	3a, b, c 3a, b, c 3a, b, c	 1, 0, 0 2, 0, 0
[3] $\mathbf{b}' = 3\mathbf{b}$			
$\left\{ \begin{array}{l} Pbcn \text{ (60)} \\ Pbcn \text{ (60)} \\ Pbcn \text{ (60)} \end{array} \right.$	$\langle 3; 5; 2 + (0, 1, 0) \rangle$ $\langle 3; 2 + (0, 3, 0); 5 + (0, 2, 0) \rangle$ $\langle 3; 2 + (0, 5, 0); 5 + (0, 4, 0) \rangle$	a, 3b, c a, 3b, c a, 3b, c	 0, 1, 0 0, 2, 0
[3] $\mathbf{c}' = 3\mathbf{c}$			
$\left\{ \begin{array}{l} Pbcn \text{ (60)} \\ Pbcn \text{ (60)} \\ Pbcn \text{ (60)} \end{array} \right.$	$\langle 5; (2; 3) + (0, 0, 1) \rangle$ $\langle 2 + (0, 0, 1); 3 + (0, 0, 3); 5 + (0, 0, 2) \rangle$ $\langle 2 + (0, 0, 1); 3 + (0, 0, 5); 5 + (0, 0, 4) \rangle$	a, b, 3c a, b, 3c a, b, 3c	 0, 0, 1 0, 0, 2

• Series of maximal isomorphic subgroups

[<i>p</i>] $\mathbf{a}' = p\mathbf{a}$			
$Pbcn$ (60)	$\langle 2 + (\frac{p}{2} - \frac{1}{2} + 2u, 0, 0); (3; 5) + (2u, 0, 0) \rangle$ $p > 2; 0 \leq u < p$ <i>p</i> conjugate subgroups for the prime <i>p</i>	pa, b, c	<i>u</i> , 0, 0
[<i>p</i>] $\mathbf{b}' = p\mathbf{b}$			
$Pbcn$ (60)	$\langle 3; 2 + (0, \frac{p}{2} - \frac{1}{2} + 2u, 0); 5 + (0, 2u, 0) \rangle$ $p > 2; 0 \leq u < p$ <i>p</i> conjugate subgroups for the prime <i>p</i>	a, pb, c	0, <i>u</i> , 0
[<i>p</i>] $\mathbf{c}' = p\mathbf{c}$			
$Pbcn$ (60)	$\langle 2 + (0, 0, \frac{p}{2} - \frac{1}{2}); 3 + (0, 0, \frac{p}{2} - \frac{1}{2} + 2u); 5 + (0, 0, 2u) \rangle$ $p > 2; 0 \leq u < p$ <i>p</i> conjugate subgroups for the prime <i>p</i>	a, b, pc	0, 0, <i>u</i>

I Minimal translationengleiche supergroups

none

II Minimal non-isomorphic klassengleiche supergroups

• Additional centring translations

 [2] $Cmcm$ (63); [2] $Aema$ (64, $Cmce$); [2] $Bbeb$ (68, $Ccce$); [2] $Ibam$ (72)

• Decreased unit cell

 [2] $\mathbf{c}' = \frac{1}{2}\mathbf{c}$ $Pbmn$ (53, $Pmna$); [2] $\mathbf{a}' = \frac{1}{2}\mathbf{a}$ $Pbcb$ (54, $Pcca$); [2] $\mathbf{b}' = \frac{1}{2}\mathbf{b}$ $Pmca$ (57, $Pbcm$)