

D_{4h}^2
 $P4/m2/c2/c$

No. 124

 $P4/mcc$
Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; (2); (3); (5); (9)

General position

 Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

16	n	1	(1) x, y, z	(2) \bar{x}, \bar{y}, z	(3) \bar{y}, x, z	(4) y, \bar{x}, z
			(5) $\bar{x}, y, \bar{z} + \frac{1}{2}$	(6) $x, \bar{y}, \bar{z} + \frac{1}{2}$	(7) $y, x, \bar{z} + \frac{1}{2}$	(8) $\bar{y}, \bar{x}, \bar{z} + \frac{1}{2}$
			(9) $\bar{x}, \bar{y}, \bar{z}$	(10) x, y, \bar{z}	(11) y, \bar{x}, \bar{z}	(12) \bar{y}, x, \bar{z}
			(13) $x, \bar{y}, z + \frac{1}{2}$	(14) $\bar{x}, y, z + \frac{1}{2}$	(15) $\bar{y}, \bar{x}, z + \frac{1}{2}$	(16) $y, x, z + \frac{1}{2}$

I Maximal translationengleiche subgroups

[2] $P\bar{4}c2$ (116)	1; 2; 7; 8; 11; 12; 13; 14	
[2] $P\bar{4}2c$ (112)	1; 2; 5; 6; 11; 12; 15; 16	
[2] $P4cc$ (103)	1; 2; 3; 4; 13; 14; 15; 16	
[2] $P422$ (89)	1; 2; 3; 4; 5; 6; 7; 8	0, 0, 1/4
[2] $P4/m11$ (83, $P4/m$)	1; 2; 3; 4; 9; 10; 11; 12	
[2] $P2/m12/c$ (66, $Cccm$)	1; 2; 7; 8; 9; 10; 15; 16	$\mathbf{a - b, a + b, c}$
[2] $P2/m2/c1$ (49, $Pccm$)	1; 2; 5; 6; 9; 10; 13; 14	

II Maximal klassengleiche subgroups

• Enlarged unit cell

[2] $\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$			
$C4/ecc$ (130, $P4/ncc$)	$\langle 2; 3; (5; 9) + (1, 0, 0) \rangle$	$\mathbf{a - b, a + b, c}$	1/2, 0, 0
$C4/ecc$ (130, $P4/ncc$)	$\langle 2; 5; (3; 9) + (1, 0, 0) \rangle$	$\mathbf{a - b, a + b, c}$	0, 1/2, 0
$C4/mcd$ (128, $P4/mnc$)	$\langle 2; 3; 9; 5 + (1, 0, 0) \rangle$	$\mathbf{a - b, a + b, c}$	
$C4/mcd$ (128, $P4/mnc$)	$\langle 2; 5; 9; 3 + (1, 0, 0) \rangle$	$\mathbf{a - b, a + b, c}$	1/2, 1/2, 0
$C4/ecd$ (126, $P4/nnc$)	$\langle 2; 3; 5; 9 + (1, 0, 0) \rangle$	$\mathbf{a - b, a + b, c}$	1/2, 0, 0
$C4/ecd$ (126, $P4/nnc$)	$\langle 2; (3; 5; 9) + (1, 0, 0) \rangle$	$\mathbf{a - b, a + b, c}$	0, 1/2, 0
$C4/mcc$ (124, $P4/mcc$)	$\langle 2; 3; 5; 9 \rangle$	$\mathbf{a - b, a + b, c}$	
$C4/mcc$ (124, $P4/mcc$)	$\langle (2; 9) + (1, 1, 0); (3; 5) + (1, 0, 0) \rangle$	$\mathbf{a - b, a + b, c}$	1/2, 1/2, 0
[3] $\mathbf{c}' = 3\mathbf{c}$			
$P4/mcc$ (124)	$\langle 2; 3; 9; 5 + (0, 0, 1) \rangle$	$\mathbf{a, b, 3c}$	
$P4/mcc$ (124)	$\langle 2; 3; 5 + (0, 0, 3); 9 + (0, 0, 2) \rangle$	$\mathbf{a, b, 3c}$	0, 0, 1
$P4/mcc$ (124)	$\langle 2; 3; 5 + (0, 0, 5); 9 + (0, 0, 4) \rangle$	$\mathbf{a, b, 3c}$	0, 0, 2

• Series of maximal isomorphic subgroups

[p] $\mathbf{c}' = p\mathbf{c}$			
$P4/mcc$ (124)	$\langle 2; 3; 5 + (0, 0, \frac{p}{2} - \frac{1}{2} + 2u); 9 + (0, 0, 2u) \rangle$ $p > 2; 0 \leq u < p$ p conjugate subgroups for the prime p	$\mathbf{a, b, pc}$	0, 0, u
[p^2] $\mathbf{a}' = p\mathbf{a}, \mathbf{b}' = p\mathbf{b}$			
$P4/mcc$ (124)	$\langle (2; 9) + (2u, 2v, 0); 3 + (u + v, -u + v, 0); 5 + (2u, 0, 0) \rangle$ $p > 2; 0 \leq u < p; 0 \leq v < p$ p^2 conjugate subgroups for the prime p	$\mathbf{pa, pb, c}$	$u, v, 0$

I Minimal translationengleiche supergroups

none

II Minimal non-isomorphic klassengleiche supergroups

• Additional centring translations

 [2] $I4/mcm$ (140)

• Decreased unit cell

 [2] $\mathbf{c}' = \frac{1}{2}\mathbf{c}$ $P4/mmm$ (123)