

C_{4v}^5 $P4cc$

No. 103

 $P4cc$ 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	d	1	(1) x, y, z	(2) \bar{x}, \bar{y}, z	(3) \bar{y}, x, z	(4) y, \bar{x}, z
			(5) $x, \bar{y}, z + \frac{1}{2}$	(6) $\bar{x}, y, z + \frac{1}{2}$	(7) $\bar{y}, \bar{x}, z + \frac{1}{2}$	(8) $y, x, z + \frac{1}{2}$

I Maximal *translationengleiche* subgroups

[2] $P411$ (75, $P4$)	1; 2; 3; 4	
[2] $P21c$ (37, $Ccc2$)	1; 2; 7; 8	$\mathbf{a} - \mathbf{b}, \mathbf{a} + \mathbf{b}, \mathbf{c}$
[2] $P2c1$ (27, $Pcc2$)	1; 2; 5; 6	

II Maximal *klassengleiche* subgroups

• Enlarged unit cell

[2] $\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$			
$C4cd$ (104, $P4nc$)	$\langle 2; 3; 5 + (0, 1, 0) \rangle$	$\mathbf{a} - \mathbf{b}, \mathbf{a} + \mathbf{b}, \mathbf{c}$	
$C4cd$ (104, $P4nc$)	$\langle 2; 5; 3 + (1, 0, 0) \rangle$	$\mathbf{a} - \mathbf{b}, \mathbf{a} + \mathbf{b}, \mathbf{c}$	$1/2, 1/2, 0$
$C4cc$ (103, $P4cc$)	$\langle 2; 3; 5 \rangle$	$\mathbf{a} - \mathbf{b}, \mathbf{a} + \mathbf{b}, \mathbf{c}$	
$C4cc$ (103, $P4cc$)	$\langle 2 + (1, 1, 0); 3 + (1, 0, 0); 5 + (0, 1, 0) \rangle$	$\mathbf{a} - \mathbf{b}, \mathbf{a} + \mathbf{b}, \mathbf{c}$	$1/2, 1/2, 0$
[3] $\mathbf{c}' = 3\mathbf{c}$			
$P4cc$ (103)	$\langle 2; 3; 5 + (0, 0, 1) \rangle$	$\mathbf{a}, \mathbf{b}, 3\mathbf{c}$	

• Series of maximal isomorphic subgroups

[p] $\mathbf{c}' = p\mathbf{c}$			
$P4cc$ (103)	$\langle 2; 3; 5 + (0, 0, \frac{p}{2} - \frac{1}{2}) \rangle$	$\mathbf{a}, \mathbf{b}, p\mathbf{c}$	
	prime $p > 2$		
	no conjugate subgroups		
[p^2] $\mathbf{a}' = p\mathbf{a}, \mathbf{b}' = p\mathbf{b}$			
$P4cc$ (103)	$\langle 2 + (2u, 2v, 0); 3 + (u + v, -u + v, 0); 5 + (0, 2v, 0) \rangle$	$p\mathbf{a}, p\mathbf{b}, \mathbf{c}$	$u, v, 0$
	prime $p > 2; 0 \leq u < p; 0 \leq v < p$		
	p^2 conjugate subgroups		

I Minimal *translationengleiche* supergroups[2] $P4/mcc$ (124); [2] $P4/ncc$ (130)II Minimal non-isomorphic *klassengleiche* supergroups

• Additional centring translations

[2] $I4cm$ (108)

• Decreased unit cell

[2] $\mathbf{c}' = \frac{1}{2}\mathbf{c}$ $P4mm$ (99)