

$I4_1cd$

No. 110

 $I4_1cd$
 C_{4v}^{12}
Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; $t(\frac{1}{2},\frac{1}{2},\frac{1}{2})$; (2); (3); (5)

General position

 Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates
 $(0,0,0)+$ $(\frac{1}{2},\frac{1}{2},\frac{1}{2})+$

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

I Maximal translationengleiche subgroups

[2] $I4_111$ (80, $I4_1$)	(1; 2; 3; 4)+
[2] $I2c1$ (45, $Iba2$)	(1; 2; 5; 6)+
[2] $I21d$ (43, $Fdd2$)	(1; 2; 7; 8)+

 $\mathbf{a} - \mathbf{b}, \mathbf{a} + \mathbf{b}, \mathbf{c}$
II Maximal klassengleiche subgroups

• Loss of centring translations	none	
• Enlarged unit cell		
[3] $\mathbf{c}' = 3\mathbf{c}$ $I4_1cd$ (110)	$\langle 2 + (1, 0, 1); 3 + (\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}); 5 + (0, 0, 1) \rangle$	$\mathbf{a}, \mathbf{b}, 3\mathbf{c}$ 1/2, 0, 0
• Series of maximal isomorphic subgroups		
[<i>p</i>] $\mathbf{c}' = p\mathbf{c}$ $I4_1cd$ (110)	$\langle 2 + (1, 0, \frac{p}{2} - \frac{1}{2}); 3 + (\frac{1}{2}, -\frac{1}{2}, \frac{p}{4} - \frac{1}{4}); 5 + (0, 0, \frac{p}{2} - \frac{1}{2}) \rangle$ $p > 2; p \equiv 3 \pmod{4}$ no conjugate subgroups	$\mathbf{a}, \mathbf{b}, p\mathbf{c}$ 1/2, 0, 0
[<i>p</i>] $\mathbf{c}' = p\mathbf{c}$ $I4_1cd$ (110)	$\langle 2 + (0, 0, \frac{p}{2} - \frac{1}{2}); 3 + (0, 0, \frac{p}{4} - \frac{1}{4}); 5 + (0, 0, \frac{p}{2} - \frac{1}{2}) \rangle$ $p > 4; p \equiv 1 \pmod{4}$ no conjugate subgroups	$\mathbf{a}, \mathbf{b}, p\mathbf{c}$
[p^2] $\mathbf{a}' = p\mathbf{a}, \mathbf{b}' = p\mathbf{b}$ $I4_1cd$ (110)	$\langle 2 + (\frac{p}{2} - \frac{1}{2} + 2u, \frac{p}{2} - \frac{1}{2} + 2v, 0); 3 + (u + v, \frac{p}{2} - \frac{1}{2} - u + v, 0); 5 + (0, 2v, 0) \rangle$ $p > 2; 0 \leq u < p; 0 \leq v < p$ p^2 conjugate subgroups for the prime p	$p\mathbf{a}, p\mathbf{b}, \mathbf{c}$ $u, v, 0$

I Minimal translationengleiche supergroups

 [2] $I4_1/acd$ (142)

II Minimal non-isomorphic klassengleiche supergroups

• Additional centring translations	none
• Decreased unit cell	
[2] $\mathbf{c}' = \frac{1}{2}\mathbf{c}$ $C4_2md$ (102, $P4_2nm$)	