

C_4^6
 $I4_1$

No. 80

 $I4_1$
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)

General position

 Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

	(0,0,0)+	$(\frac{1}{2},\frac{1}{2},\frac{1}{2})+$	
8	b	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) $y+\frac{1}{2},\bar{x},z+\frac{3}{4}$

I Maximal translationengleiche subgroups

[2] $I2$ (5, A112)	(1; 2)+	b, -a - b, c
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II Maximal klassengleiche subgroups

• Loss of centring translations

[2] $P4_3$ (78)	1; 2; (3; 4) + $(\frac{1}{2},\frac{1}{2},\frac{1}{2})$	3/4, 3/4, 0
[2] $P4_1$ (76)	1; 2; 3; 4	3/4, 1/4, 0

• Enlarged unit cell

[3] $c' = 3c$		
$I4_1$ (80)	$\langle 2 + (1,0,1); 3 + (\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}) \rangle$	a, b, 3c 1/2, 0, 0

• Series of maximal isomorphic subgroups

[p] $c' = pc$			
$I4_1$ (80)	$\langle 2 + (0,0,\frac{p}{2} - \frac{1}{2}); 3 + (0,0,\frac{p}{4} - \frac{1}{4}) \rangle$ $p > 4; p \equiv 1 \pmod{4}$ no conjugate subgroups	a, b, pc	
$I4_1$ (80)	$\langle 2 + (1,0,\frac{p}{2} - \frac{1}{2}); 3 + (\frac{1}{2}, -\frac{1}{2}, \frac{p}{4} - \frac{1}{4}) \rangle$ $p > 2; p \equiv 3 \pmod{4}$ no conjugate subgroups	a, b, pc 1/2, 0, 0	
[p ²] $a' = pa, b' = pb$	$I4_1$ (80)	$\langle 2 + (\frac{p}{2} - \frac{1}{2} + 2u, \frac{p}{2} - \frac{1}{2} + 2v, 0); 3 + (u+v, \frac{p}{2} - \frac{1}{2} - u + v, 0) \rangle$ $p > 2; 0 \leq u < p; 0 \leq v < p$ p^2 conjugate subgroups for prime $p \equiv 3 \pmod{4}$	pa, pb, c $u, v, 0$
[p = q ² + r ²] $a' = qa - rb, b' = ra + qb$	$I4_1$ (80)	$\langle 2 + (\frac{q}{2} + \frac{r}{2} - \frac{1}{2} + 2u, -\frac{r}{2} + \frac{q}{2} - \frac{1}{2}, 0); 3 + (\frac{r}{2} + u, \frac{q}{2} - u - \frac{1}{2}, 0) \rangle$ $q > 0; r > 1; q$ odd; r even; $p > 4; 0 \leq u < p$ p conjugate subgroups for prime $p \equiv 1 \pmod{4}$	qa - rb, ra + qb, c $u, 0, 0$
$I4_1$ (80)	$\langle 2 + (\frac{q}{2} + \frac{r}{2} + \frac{1}{2} + 2u, -\frac{r}{2} + \frac{q}{2} - \frac{1}{2}, 0); 3 + (\frac{r}{2} + \frac{1}{2} + u, \frac{q}{2} - 1 - u, 0) \rangle$ $q > 1; r > 0; q$ even; r odd; $p > 4; 0 \leq u < p$ p conjugate subgroups for prime $p \equiv 1 \pmod{4}$	qa - rb, ra + qb, c $1/2 + u, 0, 0$	

I Minimal translationengleiche supergroups

 [2] $I4_1/a$ (88); [2] $I4_122$ (98); [2] $I4_1md$ (109); [2] $I4_1cd$ (110)

II Minimal non-isomorphic klassengleiche supergroups

• Additional centring translations

none

• Decreased unit cell

 [2] $c' = \frac{1}{2}c$ $C4_2$ (77, $P4_2$)