

$I\bar{4}2d$

No. 122

 $I\bar{4}2d$
 D_{2d}^{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 e 1

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

I Maximal translationengleiche subgroups

[2] $I\bar{4}11$ (82, $I\bar{4}$)	(1; 2; 3; 4)+		
[2] $I21d$ (43, $Fdd2$)	(1; 2; 7; 8)+	a – b, a + b, c	0, 1/2, 0
[2] $I221$ (24, $I2_12_12_1$)	(1; 2; 5; 6)+		0, 1/4, 3/8

II Maximal klassengleiche subgroups

• Loss of centring translations

none

• Enlarged unit cell

 [3] $\mathbf{c}' = 3\mathbf{c}$

$I\bar{4}2d$ (122)	$\langle 2 + (1, 0, 0); 3 + (\frac{1}{2}, \frac{1}{2}, \frac{1}{2}); 5 + (1, 0, 2) \rangle$	a, b, 3c	1/2, 0, 1/4
$I\bar{4}2d$ (122)	$\langle 2 + (1, 0, 0); 3 + (\frac{1}{2}, \frac{1}{2}, \frac{5}{2}); 5 + (1, 0, 4) \rangle$	a, b, 3c	1/2, 0, 5/4
$I\bar{4}2d$ (122)	$\langle 2 + (1, 0, 0); 3 + (\frac{1}{2}, \frac{1}{2}, \frac{9}{2}); 5 + (1, 0, 6) \rangle$	a, b, 3c	1/2, 0, 9/4

• Series of maximal isomorphic subgroups

 [p] $\mathbf{c}' = p\mathbf{c}$

$I\bar{4}2d$ (122)	$\langle 2 + (1, 0, 0); 3 + (\frac{1}{2}, \frac{1}{2}, \frac{1}{2} + u);$ $5 + (1, 0, \frac{3p}{4} - \frac{1}{4} + 2u) \rangle$ $p > 2; 0 \leq u < p$ p conjugate subgroups for prime $p \equiv 3 \pmod{4}$	a, b, pc	1/2, 0, 1/4 + u
$I\bar{4}2d$ (122)	$\langle 2; 3; 5 + (0, 0, \frac{3p}{4} - \frac{3}{4} + 2u) \rangle$ $p > 4; 0 \leq u < p$ p conjugate subgroups for prime $p \equiv 1 \pmod{4}$	a, b, pc	0, 0, u
[p ²] $\mathbf{a}' = p\mathbf{a}, \mathbf{b}' = p\mathbf{b}$			
$I\bar{4}2d$ (122)	$\langle 2 + (2u, 2v, 0); 3 + (u - v, u + v, 0);$ $5 + (\frac{p}{2} - \frac{1}{2} + 2u, 0, 0) \rangle$ $p > 2; 0 \leq u < p; 0 \leq v < p$ p^2 conjugate subgroups for the prime p	pa, pb, c	u, v, 0

I Minimal translationengleiche supergroups

 [2] $I4_1/amd$ (141); [2] $I4_1/acd$ (142); [3] $I\bar{4}3d$ (220)

II Minimal non-isomorphic klassengleiche supergroups

• Additional centring translations

none

• Decreased unit cell

 [2] $\mathbf{c}' = \frac{1}{2}\mathbf{c}$ $C\bar{4}2d$ (118, $P\bar{4}n2$)