

$p4gm$

No. 12

$p4gm$

Generators selected (1); $t(1,0)$; $t(0,1)$; (2); (3); (5)

General position

Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

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

I Maximal translationengleiche subgroups

[2] $p411$ (10, $p4$)	1; 2; 3; 4		
[2] $p21m$ (9, $c2mm$)	1; 2; 7; 8	$\mathbf{a} - \mathbf{b}, \mathbf{a} + \mathbf{b}$	0, 1/2
[2] $p2g1$ (8, $p2gg$)	1; 2; 5; 6		

II Maximal klassengleiche subgroups

• Enlarged unit cell

none

• Series of maximal isomorphic subgroups

$[p^2] \mathbf{a}' = p\mathbf{a}, \mathbf{b}' = p\mathbf{b}$

$p4gm$ (12)

$\langle 2 + (2u, 2v); 3 + (u + v, -u + v);$
 $5 + (\frac{p}{2} - \frac{1}{2} + 2u, \frac{p}{2} - \frac{1}{2}) \rangle$
 $p > 2; 0 \leq u < p; 0 \leq v < p$
 p^2 conjugate subgroups for the prime p

$p\mathbf{a}, p\mathbf{b}$

u, v

I Minimal translationengleiche supergroups

none

II Minimal non-isomorphic klassengleiche supergroups

• Additional centring translations

[2] $c4gm$ (11, $p4mm$)

• Decreased unit cell

none