

$p3m1$

No. 14

$p3m1$

Generators selected (1); $t(1,0)$; $t(0,1)$; (2); (4)

General position

Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

6 e 1

(1) x,y (2) $\bar{y},x-y$ (3) $\bar{x}+y,\bar{x}$
(4) \bar{y},\bar{x} (5) $\bar{x}+y,y$ (6) $x,x-y$

I Maximal *translationengleiche* subgroups

[2] $p311$ (13, $p3$)	1; 2; 3	
{ [3] $p1m1$ (5, cm)	1; 4	$\mathbf{a+b, -a+b}$
[3] $p1m1$ (5, cm)	1; 5	$-\mathbf{a, -a-2b}$
[3] $p1m1$ (5, cm)	1; 6	$-\mathbf{b, 2a+b}$

II Maximal *klassengleiche* subgroups

• Enlarged unit cell

[3] $\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 3\mathbf{b}$			
{ $h3m1$ (15, $p31m$)	$\langle 2; 4 \rangle$	$\mathbf{a-b, a+2b}$	
{ $h3m1$ (15, $p31m$)	$\langle 2+(1,-1); 4+(1,1) \rangle$	$\mathbf{a-b, a+2b}$	1,0
{ $h3m1$ (15, $p31m$)	$\langle 2+(2,-2); 4+(2,2) \rangle$	$\mathbf{a-b, a+2b}$	2,0
{ $h3m1$ (15, $p31m$)	$\langle 4; 2+(0,1) \rangle$	$\mathbf{a-b, a+2b}$	$-1/3, 1/3$
{ $h3m1$ (15, $p31m$)	$\langle 2+(1,0); 4+(1,1) \rangle$	$\mathbf{a-b, a+2b}$	$2/3, 1/3$
{ $h3m1$ (15, $p31m$)	$\langle 2+(2,-1); 4+(2,2) \rangle$	$\mathbf{a-b, a+2b}$	$5/3, 1/3$
{ $h3m1$ (15, $p31m$)	$\langle 4; 2+(0,2) \rangle$	$\mathbf{a-b, a+2b}$	$-2/3, 2/3$
{ $h3m1$ (15, $p31m$)	$\langle (2; 4)+(1,1) \rangle$	$\mathbf{a-b, a+2b}$	$1/3, 2/3$
{ $h3m1$ (15, $p31m$)	$\langle 2+(2,0); 4+(2,2) \rangle$	$\mathbf{a-b, a+2b}$	$4/3, 2/3$
[4] $\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$			
{ $p3m1$ (14)	$\langle 2; 4 \rangle$	$2\mathbf{a}, 2\mathbf{b}$	
{ $p3m1$ (14)	$\langle 2+(1,-1); 4+(1,1) \rangle$	$2\mathbf{a}, 2\mathbf{b}$	1,0
{ $p3m1$ (14)	$\langle 2+(1,2); 4+(1,1) \rangle$	$2\mathbf{a}, 2\mathbf{b}$	0,1
{ $p3m1$ (14)	$\langle 2+(2,1); 4+(2,2) \rangle$	$2\mathbf{a}, 2\mathbf{b}$	1,1

• Series of maximal isomorphic subgroups

$[p^2]$ $\mathbf{a}' = p\mathbf{a}, \mathbf{b}' = p\mathbf{b}$			
$p3m1$ (14)	$\langle 2+(u+v, -u+2v); 4+(u+v, u+v) \rangle$	$p\mathbf{a}, p\mathbf{b}$	u, v
	$p > 1; p \neq 3; 0 \leq u < p; 0 \leq v < p$		
	p^2 conjugate subgroups for the prime p		

I Minimal *translationengleiche* supergroups

[2] $p6mm$ (17)

II Minimal non-isomorphic *klassengleiche* supergroups

• Additional centring translations

[3] $h3m1$ (15, $p31m$)

• Decreased unit cell

none