

$p31m$

No. 15

$p31m$

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

General position

Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

6 d 1

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

I Maximal translationengleiche subgroups

[2] $p311$ (13, $p3$)	1; 2; 3	
{ [3] $p11m$ (5, cm)	1; 4	$\mathbf{a-b}, \mathbf{a+b}$
[3] $p11m$ (5, cm)	1; 5	$\mathbf{a+2b}, -\mathbf{a}$
[3] $p11m$ (5, cm)	1; 6	$-2\mathbf{a-b}, -\mathbf{b}$

II Maximal klassengleiche subgroups

• **Enlarged unit cell**

[3] $\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 3\mathbf{b}$			
$h31m$ (14, $p3m1$)	$\langle 2; 4 \rangle$	$\mathbf{a-b}, \mathbf{a+2b}$	
[4] $\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$			
{ $p31m$ (15)	$\langle 2; 4 \rangle$	$2\mathbf{a}, 2\mathbf{b}$	
$p31m$ (15)	$\langle \langle 2; 4 \rangle + (1, -1) \rangle$	$2\mathbf{a}, 2\mathbf{b}$	1, 0
$p31m$ (15)	$\langle 2 + (1, 2); 4 + (-1, 1) \rangle$	$2\mathbf{a}, 2\mathbf{b}$	0, 1
$p31m$ (15)	$\langle 4; 2 + (2, 1) \rangle$	$2\mathbf{a}, 2\mathbf{b}$	1, 1

• **Series of maximal isomorphic subgroups**

$[p^2] \mathbf{a}' = p\mathbf{a}, \mathbf{b}' = p\mathbf{b}$			
$p31m$ (15)	$\langle 2 + (u+v, -u+2v); 4 + (u-v, -u+v) \rangle$ $p > 1; p \neq 3; 0 \leq u < p; 0 \leq v < p$ p^2 conjugate subgroups for the prime p	$p\mathbf{a}, p\mathbf{b}$	u, v

I Minimal translationengleiche supergroups

[2] $p6mm$ (17)

II Minimal non-isomorphic klassengleiche supergroups

• **Additional centring translations**

[3] $h31m$ (14, $p3m1$)

• **Decreased unit cell**

none