

$p3$

No. 13

$p3$

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

General position

Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

3 d 1

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

I Maximal translationengleiche subgroups

[3] $p1$ (1) 1

II Maximal klassengleiche subgroups

• **Enlarged unit cell**

[3] $\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 3\mathbf{b}$

$h3$ (13, $p3$)	$\langle 2 \rangle$	$\mathbf{a} - \mathbf{b}, \mathbf{a} + 2\mathbf{b}$	
$h3$ (13, $p3$)	$\langle 2 + (1,0) \rangle$	$\mathbf{a} - \mathbf{b}, \mathbf{a} + 2\mathbf{b}$	$2/3, 1/3$
$h3$ (13, $p3$)	$\langle 2 + (1,1) \rangle$	$\mathbf{a} - \mathbf{b}, \mathbf{a} + 2\mathbf{b}$	$1/3, 2/3$

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

$p3$ (13)	$\langle 2 \rangle$	$2\mathbf{a}, 2\mathbf{b}$	
$p3$ (13)	$\langle 2 + (1, -1) \rangle$	$2\mathbf{a}, 2\mathbf{b}$	1, 0
$p3$ (13)	$\langle 2 + (1, 2) \rangle$	$2\mathbf{a}, 2\mathbf{b}$	0, 1
$p3$ (13)	$\langle 2 + (2, 1) \rangle$	$2\mathbf{a}, 2\mathbf{b}$	1, 1

• **Series of maximal isomorphic subgroups**

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

$p3$ (13)	$\langle 2 + (u+v, -u+2v) \rangle$	$p\mathbf{a}, p\mathbf{b}$	u, v
	p prime; $0 \leq u < p$; $0 \leq v < p$		
	p^2 conjugate subgroups for $p = 2$ or $p = 6n - 1$		

[$p = q^2 + r^2 + qr$] $\mathbf{a}' = q\mathbf{a} - r\mathbf{b}, \mathbf{b}' = r\mathbf{a} + (q+r)\mathbf{b}$

$p3$ (13)	$\langle 2 + (u, -u) \rangle$	$q\mathbf{a} - r\mathbf{b}, r\mathbf{a} + (q+r)\mathbf{b}$	$u, 0$
	prime $p = 6n + 1$; $q > 0$; $r > 0$; $0 \leq u < p$		
	p conjugate subgroups for each pair of q and r		

I Minimal translationengleiche supergroups

[2] $p3m1$ (14); [2] $p31m$ (15); [2] $p6$ (16)

II Minimal non-isomorphic klassengleiche supergroups

none