

$p4$

No. 10

$p4$

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

**General position**

Multiplicity,  
Wyckoff letter,  
Site symmetry

Coordinates

4  $d$  1

(1)  $x, y$  (2)  $\bar{x}, \bar{y}$  (3)  $\bar{y}, x$  (4)  $y, \bar{x}$

**I Maximal translationengleiche subgroups**

[2]  $p2$  (2) 1; 2

**II Maximal klassengleiche subgroups**

• **Enlarged unit cell**

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

$c4$  (10,  $p4$ )

$\langle 2; 3 \rangle$

$\mathbf{a} - \mathbf{b}, \mathbf{a} + \mathbf{b}$

$c4$  (10,  $p4$ )

$\langle 2 + (1, 1); 3 + (1, 0) \rangle$

$\mathbf{a} - \mathbf{b}, \mathbf{a} + \mathbf{b}$

$1/2, 1/2$

• **Series of maximal isomorphic subgroups**

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

$p4$  (10)

$\langle 2 + (2u, 2v); 3 + (u + v, -u + v) \rangle$

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

$u, v$

$p > 2; 0 \leq u < p; 0 \leq v < p$

$p^2$  conjugate subgroups for prime  $p \equiv 3 \pmod{4}$

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

$p4$  (10)

$\langle 2 + (2u, 0); 3 + (u, -u) \rangle$

$q\mathbf{a} - r\mathbf{b}, r\mathbf{a} + q\mathbf{b}$

$u, 0$

$p > 2; q > 0; r > 0; 0 \leq u < p$

$p$  conjugate subgroups for each pair of  $q$  and  $r$

**I Minimal translationengleiche supergroups**

[2]  $p4mm$  (11); [2]  $p4gm$  (12)

**II Minimal non-isomorphic klassengleiche supergroups**

none