

$P3_2$ 

No. 145

 $P3_2$ 
 $C_3^3$ 
**Generators selected** (1);  $t(1,0,0)$ ;  $t(0,1,0)$ ;  $t(0,0,1)$ ; (2)

**General position**

 Multiplicity,  
Wyckoff letter,  
Site symmetry

Coordinates

 3  $a$  1 (1)  $x, y, z$  (2)  $\bar{y}, x - y, z + \frac{2}{3}$  (3)  $\bar{x} + y, \bar{x}, z + \frac{1}{3}$ 
**I Maximal translationengleiche subgroups**

 [3]  $P1$  (1) 1

**II Maximal klassengleiche subgroups**

## • Enlarged unit cell

 [2]  $c' = 2c$ 
 $P3_1$  (144)  $\langle 2 \rangle$ 
 $a, b, 2c$ 

 [3]  $a' = 3a, b' = 3b$ 
 $H3_2$  (145,  $P3_2$ )  $\langle 2 \rangle$ 
 $a - b, a + 2b, c$ 
 $H3_2$  (145,  $P3_2$ )  $\langle 2 + (1, 0, 0) \rangle$ 
 $a - b, a + 2b, c$ 
 $2/3, 1/3, 0$ 
 $H3_2$  (145,  $P3_2$ )  $\langle 2 + (1, 1, 0) \rangle$ 
 $a - b, a + 2b, c$ 
 $1/3, 2/3, 0$ 

 [4]  $a' = 2a, b' = 2b$ 
 $P3_2$  (145)  $\langle 2 \rangle$ 
 $2a, 2b, c$ 
 $P3_2$  (145)  $\langle 2 + (1, -1, 0) \rangle$ 
 $2a, 2b, c$ 
 $1, 0, 0$ 
 $P3_2$  (145)  $\langle 2 + (1, 2, 0) \rangle$ 
 $2a, 2b, c$ 
 $0, 1, 0$ 
 $P3_2$  (145)  $\langle 2 + (2, 1, 0) \rangle$ 
 $2a, 2b, c$ 
 $1, 1, 0$ 

## • Series of maximal isomorphic subgroups

 [p]  $c' = pc$ 
 $P3_2$  (145)  $\langle 2 + (0, 0, \frac{2p}{3} - \frac{2}{3}) \rangle$ 
 $a, b, pc$ 

 prime  $p = 6n + 1$   
no conjugate subgroups

 $P3_1$  (144)  $\langle 2 + (0, 0, \frac{p}{3} - \frac{2}{3}) \rangle$ 
 $a, b, pc$ 
 $p$  prime;  $p = 2$  or  $p = 6n - 1$   
no conjugate subgroups

 [ $p^2$ ]  $a' = pa, b' = pb$ 
 $P3_2$  (145)  $\langle 2 + (u + v, -u + 2v, 0) \rangle$ 
 $pa, pb, c$ 
 $u, v, 0$ 
 $p$  prime;  $p = 2$  or  $p = 6n - 1$ ;  $0 \leq u < p$ ;  $0 \leq v < p$   
 $p^2$  conjugate subgroups

 [ $p = q^2 + r^2 + qr$ ]  $a' = qa - rb, b' = ra + (q + r)b$ 
 $P3_2$  (145)  $\langle 2 + (u, -u, 0) \rangle$ 
 $qa - rb, ra + (q + r)b, c$ 
 $u, 0, 0$ 

 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]  $P3_212$  (153); [2]  $P3_221$  (154); [2]  $P6_5$  (170); [2]  $P6_2$  (171)

**II Minimal non-isomorphic klassengleiche supergroups**

## • Additional centring translations

 [3]  $R_{\text{obv}}3$  (146,  $R3$ ); [3]  $R_{\text{rev}}3$  (146,  $R3$ )

## • Decreased unit cell

 [3]  $c' = \frac{1}{3}c$   $P3$  (143)