

$P6/m$

No. 175

 $P6/m$ C_{6h}^1 Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; (2); (4); (7)

General position

Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

12	I	1	(1) x, y, z	(2) $\bar{y}, x - y, z$	(3) $\bar{x} + y, \bar{x}, z$
			(4) \bar{x}, \bar{y}, z	(5) $y, \bar{x} + y, z$	(6) $x - y, x, z$
			(7) $\bar{x}, \bar{y}, \bar{z}$	(8) $y, \bar{x} + y, \bar{z}$	(9) $x - y, x, \bar{z}$
			(10) x, y, \bar{z}	(11) $\bar{y}, x - y, \bar{z}$	(12) $\bar{x} + y, \bar{x}, \bar{z}$

I Maximal translationengleiche subgroups

[2] $P\bar{6}$ (174)	1; 2; 3; 10; 11; 12
[2] $P6$ (168)	1; 2; 3; 4; 5; 6
[2] $P\bar{3}$ (147)	1; 2; 3; 7; 8; 9
[3] $P2/m$ (10, $P112/m$)	1; 4; 7; 10

II Maximal klassengleiche subgroups

• Enlarged unit cell

[2] $c' = 2c$			
$P6_3/m$ (176)	$\langle 2; 7; 4 + (0, 0, 1) \rangle$	$\mathbf{a}, \mathbf{b}, 2\mathbf{c}$	
$P6_3/m$ (176)	$\langle 2; (4; 7) + (0, 0, 1) \rangle$	$\mathbf{a}, \mathbf{b}, 2\mathbf{c}$	0, 0, 1/2
$P6/m$ (175)	$\langle 2; 4; 7 \rangle$	$\mathbf{a}, \mathbf{b}, 2\mathbf{c}$	
$P6/m$ (175)	$\langle 2; 4; 7 + (0, 0, 1) \rangle$	$\mathbf{a}, \mathbf{b}, 2\mathbf{c}$	0, 0, 1/2
[3] $c' = 3c$			
$P6/m$ (175)	$\langle 2; 4; 7 \rangle$	$\mathbf{a}, \mathbf{b}, 3\mathbf{c}$	
$P6/m$ (175)	$\langle 2; 4; 7 + (0, 0, 2) \rangle$	$\mathbf{a}, \mathbf{b}, 3\mathbf{c}$	0, 0, 1
$P6/m$ (175)	$\langle 2; 4; 7 + (0, 0, 4) \rangle$	$\mathbf{a}, \mathbf{b}, 3\mathbf{c}$	0, 0, 2
[3] $\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 3\mathbf{b}$			
$H6/m$ (175, $P6/m$)	$\langle 2; 4; 7 \rangle$	$\mathbf{a} - \mathbf{b}, \mathbf{a} + 2\mathbf{b}, \mathbf{c}$	
$H6/m$ (175, $P6/m$)	$\langle 2 + (1, -1, 0); (4; 7) + (2, 0, 0) \rangle$	$\mathbf{a} - \mathbf{b}, \mathbf{a} + 2\mathbf{b}, \mathbf{c}$	1, 0, 0
$H6/m$ (175, $P6/m$)	$\langle 2 + (2, -2, 0); (4; 7) + (4, 0, 0) \rangle$	$\mathbf{a} - \mathbf{b}, \mathbf{a} + 2\mathbf{b}, \mathbf{c}$	2, 0, 0
[4] $\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$			
$P6/m$ (175)	$\langle 2; 4; 7 \rangle$	$2\mathbf{a}, 2\mathbf{b}, \mathbf{c}$	
$P6/m$ (175)	$\langle 2 + (1, -1, 0); (4; 7) + (2, 0, 0) \rangle$	$2\mathbf{a}, 2\mathbf{b}, \mathbf{c}$	1, 0, 0
$P6/m$ (175)	$\langle 2 + (1, 2, 0); (4; 7) + (0, 2, 0) \rangle$	$2\mathbf{a}, 2\mathbf{b}, \mathbf{c}$	0, 1, 0
$P6/m$ (175)	$\langle 2 + (2, 1, 0); (4; 7) + (2, 2, 0) \rangle$	$2\mathbf{a}, 2\mathbf{b}, \mathbf{c}$	1, 1, 0

• Series of maximal isomorphic subgroups

[p] $c' = pc$			
$P6/m$ (175)	$\langle 2; 4; 7 + (0, 0, 2u) \rangle$ $p > 2; 0 \leq u < p$ p conjugate subgroups for the prime p	$\mathbf{a}, \mathbf{b}, p\mathbf{c}$	0, 0, u
[p^2] $\mathbf{a}' = p\mathbf{a}, \mathbf{b}' = p\mathbf{b}$			
$P6/m$ (175)	$\langle 2 + (u + v, -u + 2v, 0); (4; 7) + (2u, 2v, 0) \rangle$ $p > 1; 0 \leq u < p; 0 \leq v < p$ p^2 conjugate subgroups for prime $p \equiv 2 \pmod{3}$	$p\mathbf{a}, p\mathbf{b}, \mathbf{c}$	$u, v, 0$
[$p = q^2 + r^2 + qr$] $\mathbf{a}' = q\mathbf{a} - r\mathbf{b}, \mathbf{b}' = r\mathbf{a} + (q + r)\mathbf{b}$			
$P6/m$ (175)	$\langle 2 + (u, -u, 0); (4; 7) + (2u, 0, 0) \rangle$ $q > 0; r > 0; p > 2; 0 \leq u < p$ p conjugate subgroups for each pair of q and r	$q\mathbf{a} - r\mathbf{b}, r\mathbf{a} + (q + r)\mathbf{b}, \mathbf{c}$	$u, 0, 0$

I Minimal translationengleiche supergroups

[2] $P6/mmm$ (191); [2] $P6/mcc$ (192)

II Minimal non-isomorphic klassengleiche supergroups

none