

$P6_3cm$

No. 185

 $P6_3cm$
 C_{6v}^3
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	d	1	(1) x, y, z	(2) $\bar{y}, x - y, z$	(3) $\bar{x} + y, \bar{x}, z$
			(4) $\bar{x}, \bar{y}, z + \frac{1}{2}$	(5) $y, \bar{x} + y, z + \frac{1}{2}$	(6) $x - y, x, z + \frac{1}{2}$
			(7) $\bar{y}, \bar{x}, z + \frac{1}{2}$	(8) $\bar{x} + y, y, z + \frac{1}{2}$	(9) $x, x - y, z + \frac{1}{2}$
			(10) y, x, z	(11) $x - y, \bar{y}, z$	(12) $\bar{x}, \bar{x} + y, z$

I Maximal translationengleiche subgroups

[2] $P6_311$ (173, $P6_3$)	1; 2; 3; 4; 5; 6	
[2] $P3c1$ (158)	1; 2; 3; 7; 8; 9	
[2] $P31m$ (157)	1; 2; 3; 10; 11; 12	
{ [3] $P2_1cm$ (36, $Cmc2_1$)	1; 4; 7; 10	$-a + b, -a - b, c$
{ [3] $P2_1cm$ (36, $Cmc2_1$)	1; 4; 8; 11	$-a - 2b, a, c$
{ [3] $P2_1cm$ (36, $Cmc2_1$)	1; 4; 9; 12	$2a + b, b, c$

II Maximal klassengleiche subgroups

• Enlarged unit cell

[3] $c' = 3c$		
$P6_3cm$ (185)	$\langle 2; (4; 7) + (0, 0, 1) \rangle$	$a, b, 3c$
[3] $a' = 3a, b' = 3b$		
{ $H6_3cm$ (186, $P6_3mc$)	$\langle 2; 4; 7 \rangle$	$a - b, a + 2b, c$
{ $H6_3cm$ (186, $P6_3mc$)	$\langle 2 + (1, -1, 0); 4 + (2, 0, 0); 7 + (1, 1, 0) \rangle$	$a - b, a + 2b, c$ 1, 0, 0
{ $H6_3cm$ (186, $P6_3mc$)	$\langle 2 + (2, 1, 0); (4; 7) + (2, 2, 0) \rangle$	$a - b, a + 2b, c$ 1, 1, 0
[4] $a' = 2a, b' = 2b$		
{ $P6_3cm$ (185)	$\langle 2; 4; 7 \rangle$	$2a, 2b, c$
{ $P6_3cm$ (185)	$\langle 2 + (1, -1, 0); 4 + (2, 0, 0); 7 + (1, 1, 0) \rangle$	$2a, 2b, c$ 1, 0, 0
{ $P6_3cm$ (185)	$\langle 2 + (1, 2, 0); 4 + (0, 2, 0); 7 + (1, 1, 0) \rangle$	$2a, 2b, c$ 0, 1, 0
{ $P6_3cm$ (185)	$\langle 2 + (2, 1, 0); (4; 7) + (2, 2, 0) \rangle$	$2a, 2b, c$ 1, 1, 0

• Series of maximal isomorphic subgroups

[p] $c' = pc$		
$P6_3cm$ (185)	$\langle 2; (4; 7) + (0, 0, \frac{p}{2} - \frac{1}{2}) \rangle$	a, b, pc
	$p > 2$	
	no conjugate subgroups	
[p^2] $a' = pa, b' = pb$		
$P6_3cm$ (185)	$\langle 2 + (u + v, -u + 2v, 0); 4 + (2u, 2v, 0); 7 + (u + v, u + v, 0) \rangle$	pa, pb, c $u, v, 0$
	$p > 1; p \neq 3; 0 \leq u < p; 0 \leq v < p$	
	p^2 conjugate subgroups for the prime p	

I Minimal translationengleiche supergroups

 [2] $P6_3/mcm$ (193)

II Minimal non-isomorphic klassengleiche supergroups

• Additional centring translations

 [3] $H6_3cm$ (186, $P6_3mc$)

• Decreased unit cell

 [2] $c' = \frac{1}{2}c$ $P6mm$ (183)