

$p6/m$

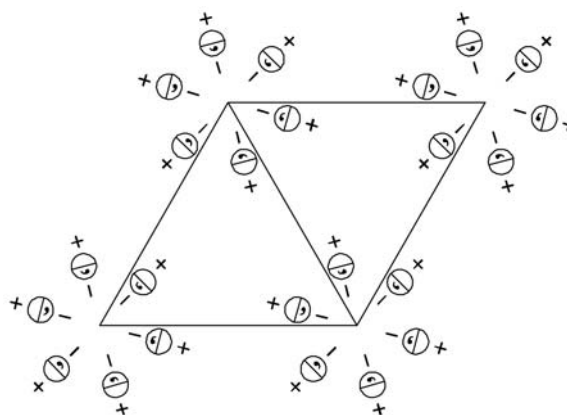
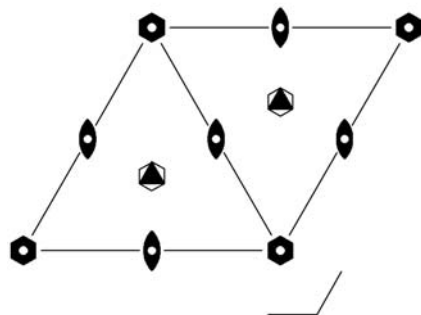
$6/m$

Hexagonal/Hexagonal

No. 75

$p6/m$

Patterson symmetry $p6/m$



Origin at centre ($6/m$)

Asymmetric unit $0 \leq x \leq \frac{2}{3}; 0 \leq y \leq \frac{1}{2}; x \leq (1+y)/2; y \leq \min(1-x, x); 0 \leq z$
Vertices $0, 0 \quad \frac{1}{2}, 0 \quad \frac{2}{3}, \frac{1}{3} \quad \frac{1}{2}, \frac{1}{2}$

Symmetry operations

- | | | |
|--|---|--|
| (1) 1
($1 0, 0, 0$) | (2) 3^+ 0, 0, z
($3_z 0, 0, 0$) | (3) 3^- 0, 0, z
($3_z^{-1} 0, 0, 0$) |
| (4) 2 0, 0, z
($2_z 0, 0, 0$) | (5) 6^- 0, 0, z
($6_z^{-1} 0, 0, 0$) | (6) 6^+ 0, 0, z
($6_z 0, 0, 0$) |
| (7) $\bar{1}$ 0, 0, 0
($\bar{1} 0, 0, 0$) | (8) $\bar{3}^+$ 0, 0, z; 0, 0, 0
($\bar{3}_z 0, 0, 0$) | (9) $\bar{3}^-$ 0, 0, z; 0, 0, 0
($\bar{3}_z^{-1} 0, 0, 0$) |
| (10) m x, y, 0
($m_z 0, 0, 0$) | (11) $\bar{6}^-$ 0, 0, z; 0, 0, 0
($\bar{6}_z^{-1} 0, 0, 0$) | (12) $\bar{6}^+$ 0, 0, z; 0, 0, 0
($\bar{6}_z 0, 0, 0$) |

Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; (2); (4); (7)

Positions

Multiplicity, Wyckoff letter, Site symmetry		Coordinates						Reflection conditions
								General:
12	h 1	(1) x, y, z	(2) $\bar{y}, x - y, z$	(3) $\bar{x} + y, \bar{x}, z$				no conditions
		(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) $\bar{x} + y, \bar{x}, \bar{z}$				
Special: no extra conditions								
6	g $m..$	$x, y, 0$	$\bar{y}, x - y, 0$	$\bar{x} + y, \bar{x}, 0$	$\bar{x}, \bar{y}, 0$	$y, \bar{x} + y, 0$	$x - y, x, 0$	
6	f $2..$	$\frac{1}{2}, 0, z$	$0, \frac{1}{2}, z$	$\frac{1}{2}, \frac{1}{2}, z$	$\frac{1}{2}, 0, \bar{z}$	$0, \frac{1}{2}, \bar{z}$	$\frac{1}{2}, \frac{1}{2}, \bar{z}$	
4	e $3..$	$\frac{1}{3}, \frac{2}{3}, z$	$\frac{2}{3}, \frac{1}{3}, z$	$\frac{1}{3}, \frac{2}{3}, \bar{z}$	$\frac{2}{3}, \frac{1}{3}, \bar{z}$			
3	d $2/m..$	$\frac{1}{2}, 0, 0$	$0, \frac{1}{2}, 0$	$\frac{1}{2}, \frac{1}{2}, 0$				
2	c $6..$	$0, 0, z$	$0, 0, \bar{z}$					
2	b $\bar{6}..$	$\frac{1}{3}, \frac{2}{3}, 0$	$\frac{2}{3}, \frac{1}{3}, 0$					
1	a $6/m..$	$0, 0, 0$						

Symmetry of special projections

Along [001] $p6$
 $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$
 Origin at $0, 0, z$

Along [100] $\neq 2mm$
 $\mathbf{a}' = \frac{1}{2}(\mathbf{a} + 2\mathbf{b})$
 Origin at $x, 0, 0$

Along [210] $\neq 2mm$
 $\mathbf{a}' = \frac{1}{2}\mathbf{b}$
 Origin at $x, \frac{1}{2}x, 0$

Maximal non-isotypic subgroups

I [2] $p\bar{6}$ (74) 1; 2; 3; 10; 11; 12
 [2] $p6$ (73) 1; 2; 3; 4; 5; 6
 [2] $p\bar{3}$ (66) 1; 2; 3; 7; 8; 9
 [3] $p2/m11$ ($p112/m, 6$) 1; 4; 7; 10

IIa none

IIb none

Maximal isotypic subgroups of lowest index

IIc [3] $h6/m$ ($\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 3\mathbf{b}$) ($p6/m, 75$)

Minimal non-isotypic supergroups

I [2] $p6/mmm$ (80)

II none