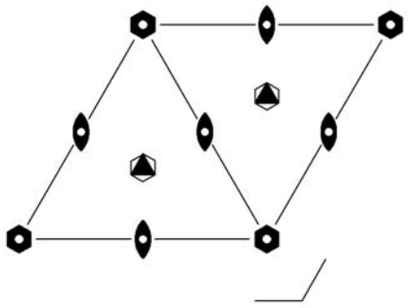
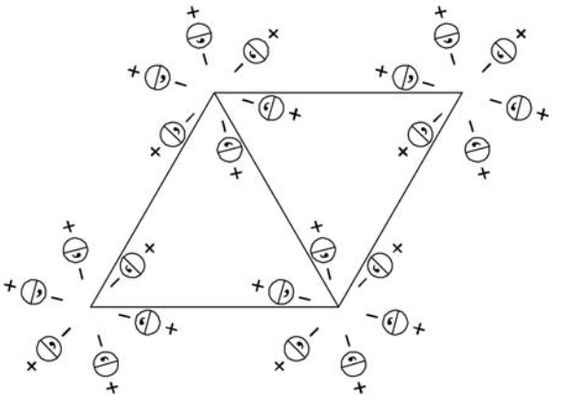
International Tables for Crystallography (2006). Vol. E, Layer group 75, pp. 378–379.

$p6/m$ $6/m$ Hexagonal/Hexagonal

No. 75 $p6/m$ Patterson symmetry $p6/m$





Origin at centre $(6/m)$

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

Vertices $0,0$ $\frac{1}{2},0$ $\frac{2}{3},\frac{1}{3}$ $\frac{1}{2},\frac{1}{2}$

Symmetry operations

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

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 (4) $\bar{x},\bar{y},z$ (7) $\bar{x},\bar{y},\bar{z}$ (10) $x,y,\bar{z}$	(2) $\bar{y},x-y,z$ (5) $y,\bar{x}+y,z$ (8) $y,\bar{x}+y,\bar{z}$ (11) $\bar{y},x-y,\bar{z}$	(3) $\bar{x}+y,\bar{x},z$ (6) $x-y,x,z$ (9) $x-y,x,\bar{z}$ (12) $\bar{x}+y,\bar{x},\bar{z}$	no conditions
						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] $\not{p}2mm$
$\mathbf{a}' = \frac{1}{2}(\mathbf{a}+2\mathbf{b})$
Origin at $x,0,0$

Along [210] $\not{p}2mm$
$\mathbf{a}' = \frac{1}{2}\mathbf{b}$
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