

$P\bar{6}$

C_{3h}^1

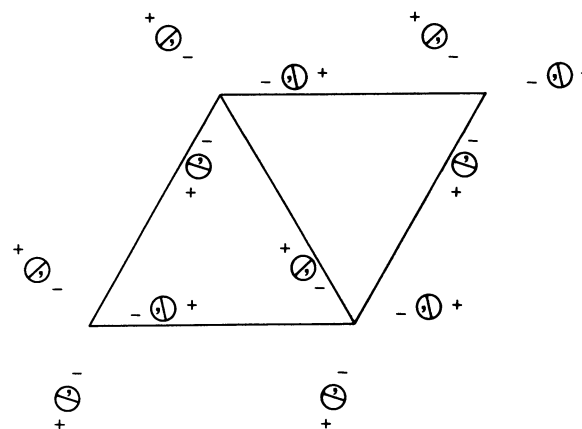
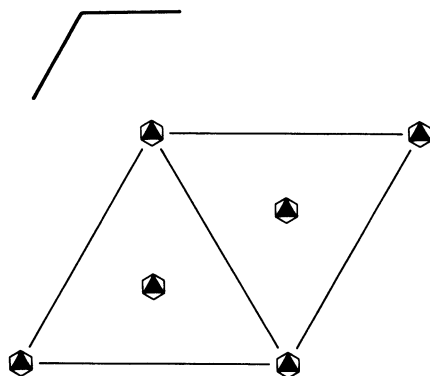
$\bar{6}$

Hexagonal

No. 174

$P\bar{6}$

Patterson symmetry $P6/m$



Origin at $\bar{6}$

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

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

Symmetry operations

- | | | |
|-----------------------|--|--|
| (1) 1 | (2) $3^+ \quad 0, 0, z$ | (3) $3^- \quad 0, 0, z$ |
| (4) $m \quad x, y, 0$ | (5) $\bar{6}^- \quad 0, 0, z; \quad 0, 0, 0$ | (6) $\bar{6}^+ \quad 0, 0, z; \quad 0, 0, 0$ |

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

Positions

Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

Reflection conditions

General:

no conditions

Special: no extra conditions

6	l	1	(1) x, y, z (4) x, y, \bar{z}	(2) $\bar{y}, x - y, z$ (5) $\bar{y}, x - y, \bar{z}$	(3) $\bar{x} + y, \bar{x}, z$ (6) $\bar{x} + y, \bar{x}, \bar{z}$
3	k	$m \dots$	$x, y, \frac{1}{2}$	$\bar{y}, x - y, \frac{1}{2}$	$\bar{x} + y, \bar{x}, \frac{1}{2}$
3	j	$m \dots$	$x, y, 0$	$\bar{y}, x - y, 0$	$\bar{x} + y, \bar{x}, 0$
2	i	$3 \dots$	$\frac{2}{3}, \frac{1}{3}, z$	$\frac{2}{3}, \frac{1}{3}, \bar{z}$	
2	h	$3 \dots$	$\frac{1}{3}, \frac{2}{3}, z$	$\frac{1}{3}, \frac{2}{3}, \bar{z}$	
2	g	$3 \dots$	$0, 0, z$	$0, 0, \bar{z}$	
1	f	$\bar{6} \dots$	$\frac{2}{3}, \frac{1}{3}, \frac{1}{2}$		
1	e	$\bar{6} \dots$	$\frac{2}{3}, \frac{1}{3}, 0$		
1	d	$\bar{6} \dots$	$\frac{1}{3}, \frac{2}{3}, \frac{1}{2}$		
1	c	$\bar{6} \dots$	$\frac{1}{3}, \frac{2}{3}, 0$		
1	b	$\bar{6} \dots$	$0, 0, \frac{1}{2}$		
1	a	$\bar{6} \dots$	$0, 0, 0$		

Symmetry of special projections

Along $[001]$ $p3$
 $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$
Origin at $0, 0, z$

Along $[100]$ $p11m$
 $\mathbf{a}' = \frac{1}{2}(\mathbf{a} + 2\mathbf{b})$ $\mathbf{b}' = \mathbf{c}$
Origin at $x, 0, 0$

Along $[210]$ $p11m$
 $\mathbf{a}' = \frac{1}{2}\mathbf{b}$ $\mathbf{b}' = \mathbf{c}$
Origin at $x, \frac{1}{2}x, 0$

Maximal non-isomorphic subgroups

I $[2] P3 (143)$ 1; 2; 3
 $[3] Pm (6)$ 1; 4

IIa none

IIb none

Maximal isomorphic subgroups of lowest index

IIc $[2] P\bar{6} (\mathbf{c}' = 2\mathbf{c}) (174)$; $[3] H\bar{6} (\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 3\mathbf{b}) (P\bar{6}, 174)$

Minimal non-isomorphic supergroups

I $[2] P6/m (175)$; $[2] P6_3/m (176)$; $[2] P\bar{6}m2 (187)$; $[2] P\bar{6}c2 (188)$; $[2] P\bar{6}2m (189)$; $[2] P\bar{6}2c (190)$

II none