

$P6_2$

C_6^4

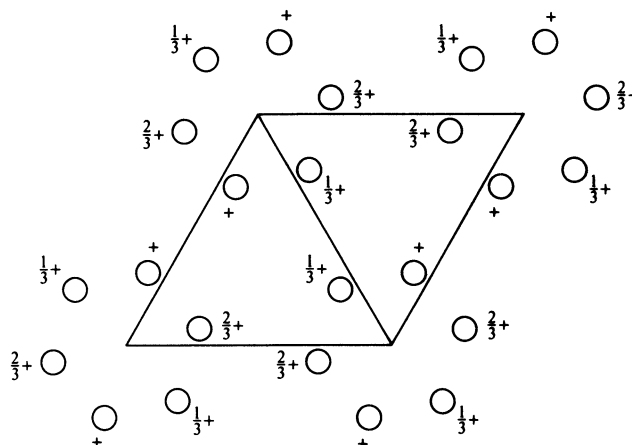
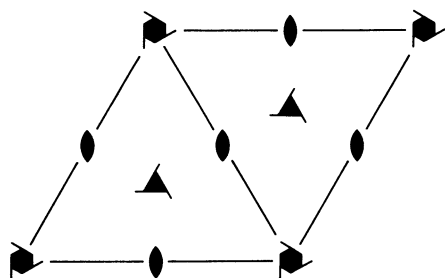
6

Hexagonal

No. 171

$P6_2$

Patterson symmetry $P6/m$



Origin on 2 on 6_2

Asymmetric unit $0 \leq x \leq 1; 0 \leq y \leq 1; 0 \leq z \leq \frac{1}{3}; y \leq x$
 Vertices $0,0,0$ $1,0,0$ $1,1,0$
 $0,0,\frac{1}{3}$ $1,0,\frac{1}{3}$ $1,1,\frac{1}{3}$

Symmetry operations

- (1) 1 (2) $3^+(0,0,\frac{2}{3})$ $0,0,z$ (3) $3^-(0,0,\frac{1}{3})$ $0,0,z$
 (4) 2 $0,0,z$ (5) $6^-(0,0,\frac{2}{3})$ $0,0,z$ (6) $6^+(0,0,\frac{1}{3})$ $0,0,z$

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
6 <i>c</i> 1	(1) x,y,z (2) $\bar{y},x-y,z+\frac{2}{3}$ (3) $\bar{x}+y,\bar{x},z+\frac{1}{3}$ (4) \bar{x},\bar{y},z (5) $y,\bar{x}+y,z+\frac{2}{3}$ (6) $x-y,x,z+\frac{1}{3}$	General: $000l : l = 3n$ Special: as above, plus $hkil : h = 2n + 1$ or $k = 2n + 1$ or $l = 3n$ $hkil : l = 3n$
3 <i>b</i> 2..	$\frac{1}{2},\frac{1}{2},z$ $\frac{1}{2},0,z+\frac{2}{3}$ $0,\frac{1}{2},z+\frac{1}{3}$	
3 <i>a</i> 2..	$0,0,z$ $0,0,z+\frac{2}{3}$ $0,0,z+\frac{1}{3}$	

Symmetry of special projections

Along $[001]$ $p6$ $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$ $\mathbf{c}' = \mathbf{c}$ Origin at $0,0,0$
 Along $[100]$ $p1m1$ $\mathbf{a}' = \frac{1}{2}(\mathbf{a} + 2\mathbf{b})$ $\mathbf{b}' = \mathbf{c}$ Origin at $x,0,0$
 Along $[210]$ $p1m1$ $\mathbf{a}' = \frac{1}{2}\mathbf{b}$ $\mathbf{b}' = \mathbf{c}$ Origin at $x,\frac{1}{2}x,0$

Maximal non-isomorphic subgroups

- I** [2] $P3_2(145)$ 1; 2; 3
 [3] $P2(3)$ 1; 4
IIa none
IIb [2] $P6_1(\mathbf{c}' = 2\mathbf{c})(169)$

Maximal isomorphic subgroups of lowest index

- IIc** [2] $P6_4(\mathbf{c}' = 2\mathbf{c})(172)$; [3] $H6_2(\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 3\mathbf{b})(P6_2, 171)$; [7] $P6_2(\mathbf{c}' = 7\mathbf{c})(171)$

Minimal non-isomorphic supergroups

- I** [2] $P6_22(180)$
II [3] $P6(\mathbf{c}' = \frac{1}{3}\mathbf{c})(168)$