

$\bar{6}c2$

$\bar{6}m2$

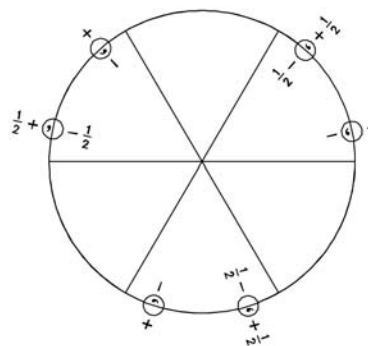
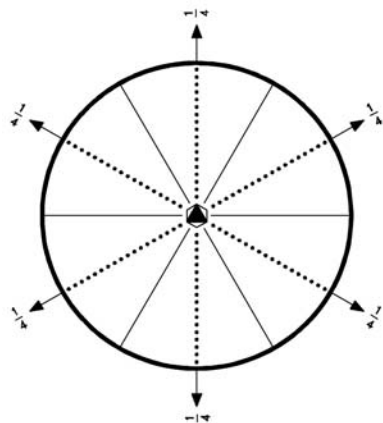
Hexagonal

No. 72

$\bar{6}c2$

Patterson symmetry $\bar{6}/mmm$

FIRST SETTING



Origin on $\bar{6}c1$

Asymmetric unit $0 \leq x; 0 \leq y; 0 \leq z \leq \frac{1}{4}$

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) m x,y,0
(m_z 0,0,0) | (5) $\bar{6}^-$ 0,0,z; 0,0,0
($\bar{6}_z^{-1}$ 0,0,0) | (6) $\bar{6}^+$ 0,0,z; 0,0,0
($\bar{6}_z$ 0,0,0) |
| (7) c x, \bar{x} ,z
(m_{xy} 0,0, $\frac{1}{2}$) | (8) c x,2x,z
(m_x 0,0, $\frac{1}{2}$) | (9) c 2x,x,z
(m_y 0,0, $\frac{1}{2}$) |
| (10) 2 x, \bar{x} , $\frac{1}{4}$
(2_3 0,0, $\frac{1}{2}$) | (11) 2 x,2x, $\frac{1}{4}$
(2_2 0,0, $\frac{1}{2}$) | (12) 2 2x,x, $\frac{1}{4}$
(2_1 0,0, $\frac{1}{2}$) |

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

Positions

Multiplicity, Wyckoff letter, Site symmetry	Coordinates			Reflection conditions
				General:
12 f 1	(1) x, y, z (4) x, y, \bar{z} (7) $\bar{y}, \bar{x}, z + \frac{1}{2}$ (10) $\bar{y}, \bar{x}, \bar{z} + \frac{1}{2}$	(2) $\bar{y}, x - y, z$ (5) $\bar{y}, x - y, \bar{z}$ (8) $\bar{x} + y, y, z + \frac{1}{2}$ (11) $\bar{x} + y, y, \bar{z} + \frac{1}{2}$	(3) $\bar{x} + y, \bar{x}, z$ (6) $\bar{x} + y, \bar{x}, \bar{z}$ (9) $x, x - y, z + \frac{1}{2}$ (12) $x, x - y, \bar{z} + \frac{1}{2}$	$l : l = 2n$
				Special: no extra conditions
6 e $m..$	$x, y, 0$	$\bar{y}, x - y, 0$	$\bar{x} + y, \bar{x}, 0$	$\bar{y}, \bar{x}, \frac{1}{2}$ $\bar{x} + y, y, \frac{1}{2}$ $x, x - y, \frac{1}{2}$
6 d $..2$	$x, \bar{x}, \frac{1}{4}$	$x, 2x, \frac{1}{4}$	$2\bar{x}, \bar{x}, \frac{1}{4}$	$x, \bar{x}, \frac{3}{4}$ $x, 2x, \frac{3}{4}$ $2\bar{x}, \bar{x}, \frac{3}{4}$
4 c $3..$	$0, 0, z$	$0, 0, \bar{z}$	$0, 0, z + \frac{1}{2}$	$0, 0, \bar{z} + \frac{1}{2}$
2 b $\bar{6}..$	$0, 0, 0$	$0, 0, \frac{1}{2}$		
2 a 3.2	$0, 0, \frac{1}{4}$	$0, 0, \frac{3}{4}$		

Symmetry of special projections

Along [001] $3m$

Along [100] $\bar{6}1m1$

Along [210] $\bar{6}2mg$

$\mathbf{a}' = \frac{1}{2}\mathbf{c}$

$\mathbf{a}' = \mathbf{c}$

Origin at $0, 0, z$

Origin at $x, 0, 0$

Origin at $x, \frac{1}{2}x, \frac{1}{4}$

Maximal non-isotypic non-enantiomorphic subgroups

I	$[2]\bar{6}11 (\bar{6}, 59)$	1; 2; 3; 4; 5; 6
	$[2]\bar{6}3c1 (50)$	1; 2; 3; 7; 8; 9
	$[2]\bar{6}312 (46)$	1; 2; 3; 10; 11; 12
	$[3]\bar{6}mc2 (\bar{6}2cm, 19)$	1; 4; 7; 10
	$[3]\bar{6}mc2 (\bar{6}2cm, 19)$	1; 4; 8; 11
	$[3]\bar{6}mc2 (\bar{6}2cm, 19)$	1; 4; 9; 12

IIa none

IIb none

Maximal isotypic subgroups and enantiomorphic subgroups of lowest index

IIc $[3]\bar{6}c2 (\mathbf{c}' = 3\mathbf{c}) (72)$

Minimal non-isotypic non-enantiomorphic supergroups

I $[2]\bar{6}/mcc (74)$; $[2]\bar{6}_3/mmc (75)$

II $[2]\bar{6}m2 (\mathbf{c}' = \frac{1}{2}\mathbf{c}) (71)$

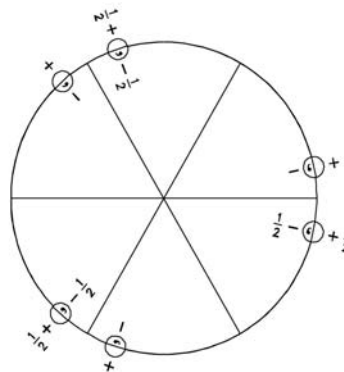
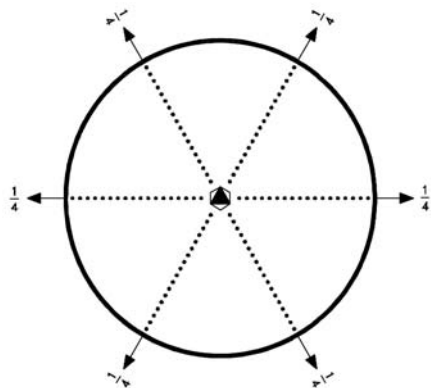
$\bar{6}2c$ $\bar{6}2m$

Hexagonal

No. 72

 $\bar{6}2c$ Patterson symmetry $\bar{6}/mmm$

SECOND SETTING

Origin on $\bar{6}1c$ Asymmetric unit $0 \leq x; 0 \leq y; 0 \leq z \leq \frac{1}{2}; y \leq x$

Symmetry operations

- | | | |
|--|--|---|
| (1) 1
(1 0,0,0) | (2) 3^+ 0,0,z
(3_2 0,0,0) | (3) 3^- 0,0,z
(3_2^{-1} 0,0,0) |
| (4) m x,y,0
(m_z 0,0,0) | (5) $\bar{6}^-$ 0,0,z; 0,0,0
($\bar{6}_z^{-1}$ 0,0,0) | (6) $\bar{6}^+$ 0,0,z; 0,0,0
($\bar{6}_z$ 0,0,0) |
| (7) 2 x,x, $\frac{1}{4}$
(2_{xy} 0,0, $\frac{1}{2}$) | (8) 2 x,0, $\frac{1}{4}$
(2_x 0,0, $\frac{1}{2}$) | (9) 2 0,y, $\frac{1}{4}$
(2_y 0,0, $\frac{1}{2}$) |
| (10) c x,x,z
(m_3 0,0, $\frac{1}{2}$) | (11) c x,0,z
(m_2 0,0, $\frac{1}{2}$) | (12) c 0,y,z
(m_1 0,0, $\frac{1}{2}$) |

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

Positions

Multiplicity, Wyckoff letter, Site symmetry	Coordinates			Reflection conditions
				General:
12 <i>f</i> 1	(1) x, y, z	(2) $\bar{y}, x - y, z$	(3) $\bar{x} + y, \bar{x}, z$	$l : l = 2n$
	(4) x, y, \bar{z}	(5) $\bar{y}, x - y, \bar{z}$	(6) $\bar{x} + y, \bar{x}, \bar{z}$	
	(7) $y, x, \bar{z} + \frac{1}{2}$	(8) $x - y, \bar{y}, \bar{z} + \frac{1}{2}$	(9) $\bar{x}, \bar{x} + y, \bar{z} + \frac{1}{2}$	
	(10) $y, x, z + \frac{1}{2}$	(11) $x - y, \bar{y}, z + \frac{1}{2}$	(12) $\bar{x}, \bar{x} + y, z + \frac{1}{2}$	
				Special: no extra conditions
6 <i>e</i> $m..$	$x, y, 0$	$\bar{y}, x - y, 0$	$\bar{x} + y, \bar{x}, 0$	$y, x, \frac{1}{2}$ $x - y, \bar{y}, \frac{1}{2}$ $\bar{x}, \bar{x} + y, \frac{1}{2}$
6 <i>d</i> $.2.$	$x, 0, \frac{1}{4}$	$0, x, \frac{1}{4}$	$\bar{x}, \bar{x}, \frac{1}{4}$	$x, 0, \frac{3}{4}$ $0, x, \frac{3}{4}$ $\bar{x}, \bar{x}, \frac{3}{4}$
4 <i>c</i> $3..$	$0, 0, z$	$0, 0, \bar{z} + \frac{1}{2}$	$0, 0, \bar{z}$	$0, 0, z + \frac{1}{2}$
2 <i>b</i> $\bar{6}..$	$0, 0, 0$	$0, 0, \frac{1}{2}$		
2 <i>a</i> $32.$	$0, 0, \frac{1}{4}$	$0, 0, \frac{3}{4}$		

Symmetry of special projections

Along [001] $3m$

Along [100] $\bar{6}2mg$

Along [210] $\bar{6}1m1$

$\mathbf{a}' = \mathbf{c}$

$\mathbf{a}' = \frac{1}{2}\mathbf{c}$

Origin at $0, 0, z$

Origin at $x, 0, \frac{1}{4}$

Origin at $x, \frac{1}{2}x, 0$

Maximal non-isotypic non-enantiomorphic subgroups

I	$[2]\bar{6}11 (\bar{6}, 59)$	1; 2; 3; 4; 5; 6
	$[2]\bar{6}31c (\bar{6}3c1, 50)$	1; 2; 3; 10; 11; 12
	$[2]\bar{6}321 (\bar{6}312, 46)$	1; 2; 3; 7; 8; 9
	$[3]\bar{6}m2c (\bar{6}2cm, 19)$	1; 4; 7; 10
	$[3]\bar{6}m2c (\bar{6}2cm, 19)$	1; 4; 8; 11
	$[3]\bar{6}m2c (\bar{6}2cm, 19)$	1; 4; 9; 12

IIa none

IIb none

Maximal isotypic subgroups and enantiomorphic subgroups of lowest index

IIc $[3]\bar{6}2c (\mathbf{c}' = 3\mathbf{c}) (\bar{6}c2, 72)$

Minimal non-isotypic non-enantiomorphic supergroups

I $[2]\bar{6}/mcc (74)$; $[2]\bar{6}_3/mmc (75)$

II $[2]\bar{6}m2 (\mathbf{c}' = \frac{1}{2}\mathbf{c}) (71)$