

$\bar{6}/mcc$

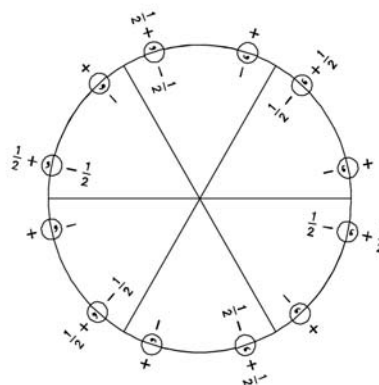
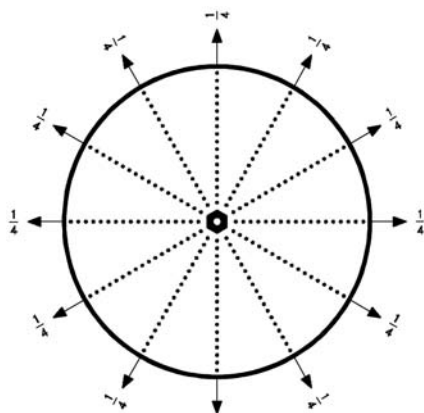
$6/mmm$

Hexagonal

No. 74

$\bar{6}/m2/c2/c$

Patterson symmetry $\bar{6}/mmm$



Origin at centre ($6/m$) at $6/mcc$

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

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) 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) 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, $\frac{1}{2}$) |
| (13) $\bar{1}$ 0,0,0
($\bar{1}$ 0,0,0) | (14) $\bar{3}^+$ 0,0,z; 0,0,0
($\bar{3}_z$ 0,0,0) | (15) $\bar{3}^-$ 0,0,z; 0,0,0
($\bar{3}_z^{-1}$ 0,0,0) |
| (16) m $x, y, 0$
(m_z 0,0,0) | (17) $\bar{6}^-$ 0,0,z; 0,0,0
($\bar{6}_z^{-1}$ 0,0,0) | (18) $\bar{6}^+$ 0,0,z; 0,0,0
($\bar{6}_z$ 0,0,0) |
| (19) c x, \bar{x}, z
(m_{xy} 0,0, $\frac{1}{2}$) | (20) c $x, 2x, z$
(m_x 0,0, $\frac{1}{2}$) | (21) c $2x, x, z$
(m_y 0,0, $\frac{1}{2}$) |
| (22) c x, x, z
(m_3 0,0, $\frac{1}{2}$) | (23) c $x, 0, z$
(m_2 0,0, $\frac{1}{2}$) | (24) c 0, y, z
(m_1 0,0, $\frac{1}{2}$) |

Generators selected (1); $t(0,0,1)$; (2); (4); (7); (13)

Positions

Multiplicity, Wyckoff letter, Site symmetry	Coordinates	Reflection conditions
24 <i>g</i> 1	(1) x, y, z (2) $\bar{y}, x - y, z$ (3) $\bar{x} + y, \bar{x}, z$ (4) \bar{x}, \bar{y}, z (5) $y, \bar{x} + y, z$ (6) $x - y, x, z$ (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) $\bar{y}, \bar{x}, \bar{z} + \frac{1}{2}$ (11) $\bar{x} + y, y, \bar{z} + \frac{1}{2}$ (12) $x, x - y, \bar{z} + \frac{1}{2}$ (13) $\bar{x}, \bar{y}, \bar{z}$ (14) $y, \bar{x} + y, \bar{z}$ (15) $x - y, x, \bar{z}$ (16) x, y, \bar{z} (17) $\bar{y}, x - y, \bar{z}$ (18) $\bar{x} + y, \bar{x}, \bar{z}$ (19) $\bar{y}, \bar{x}, z + \frac{1}{2}$ (20) $\bar{x} + y, y, z + \frac{1}{2}$ (21) $x, x - y, z + \frac{1}{2}$ (22) $y, x, z + \frac{1}{2}$ (23) $x - y, \bar{y}, z + \frac{1}{2}$ (24) $\bar{x}, \bar{x} + y, z + \frac{1}{2}$	General: $l : l = 2n$

Special: no extra conditions

12 <i>f</i> $m..$	$x, y, 0$ $y, x, \frac{1}{2}$	$\bar{y}, x - y, 0$ $x - y, \bar{y}, \frac{1}{2}$	$\bar{x} + y, \bar{x}, 0$ $\bar{x}, \bar{x} + y, \frac{1}{2}$	$\bar{x}, \bar{y}, 0$ $\bar{y}, \bar{x}, \frac{1}{2}$	$y, \bar{x} + y, 0$ $\bar{x} + y, y, \frac{1}{2}$	$x - y, x, 0$ $x, x - y, \frac{1}{2}$
12 <i>e</i> $..2$	$x, 2x, \frac{1}{4}$ $2x, x, \frac{3}{4}$	$2\bar{x}, \bar{x}, \frac{1}{4}$ $\bar{x}, 2\bar{x}, \frac{3}{4}$	$x, \bar{x}, \frac{1}{4}$ $\bar{x}, x, \frac{3}{4}$	$\bar{x}, 2\bar{x}, \frac{1}{4}$ $2\bar{x}, \bar{x}, \frac{3}{4}$	$2x, x, \frac{1}{4}$ $x, 2x, \frac{3}{4}$	$\bar{x}, x, \frac{1}{4}$ $x, \bar{x}, \frac{3}{4}$
12 <i>d</i> $.2.$	$x, 0, \frac{1}{4}$ $\bar{x}, 0, \frac{3}{4}$	$0, x, \frac{1}{4}$ $0, \bar{x}, \frac{3}{4}$	$\bar{x}, \bar{x}, \frac{1}{4}$ $x, x, \frac{3}{4}$	$\bar{x}, 0, \frac{1}{4}$ $x, 0, \frac{3}{4}$	$0, \bar{x}, \frac{1}{4}$ $0, x, \frac{3}{4}$	$x, x, \frac{1}{4}$ $\bar{x}, \bar{x}, \frac{3}{4}$
4 <i>c</i> $6..$	$0, 0, z$	$0, 0, \bar{z} + \frac{1}{2}$	$0, 0, \bar{z}$	$0, 0, z + \frac{1}{2}$		
2 <i>b</i> $6/m..$	$0, 0, 0$	$0, 0, \frac{1}{2}$				
2 <i>a</i> 622	$0, 0, \frac{1}{4}$	$0, 0, \frac{3}{4}$				

Symmetry of special projections

Along [001] $6mm$

Along [100] $\mu 2mm$

Along [210] $\mu 2mm$

Origin at $0, 0, z$

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

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

Origin at $x, 0, 0$

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

Maximal non-isotypic non-enantiomorphic subgroups

I	$[2]\mu\bar{6}c2 (\mu\bar{6}c2, 72)$	1; 2; 3; 7; 8; 9; 16; 17; 18; 22; 23; 24
	$[2]\mu\bar{6}c2 (72)$	1; 2; 3; 10; 11; 12; 16; 17; 18; 19; 20; 21
	$[2]\mu 6cc (69)$	1; 2; 3; 4; 5; 6; 19; 20; 21; 22; 23; 24
	$[2]\mu 622 (62)$	1; 2; 3; 4; 5; 6; 7; 8; 9; 10; 11; 12
	$[2]\mu 6/m11 (\mu 6/m, 60)$	1; 2; 3; 4; 5; 6; 13; 14; 15; 16; 17; 18
	$[2]\mu\bar{3}c1 (\mu\bar{3}c1, 52)$	1; 2; 3; 7; 8; 9; 13; 14; 15; 19; 20; 21
	$[2]\mu\bar{3}1c (52)$	1; 2; 3; 10; 11; 12; 13; 14; 15; 22; 23; 24
	$[3]\mu mcc (\mu ccm, 21)$	1; 4; 7; 10; 13; 16; 19; 22
	$[3]\mu mcc (\mu ccm, 21)$	1; 4; 8; 11; 13; 16; 20; 23
	$[3]\mu mcc (\mu ccm, 21)$	1; 4; 9; 12; 13; 16; 21; 24

IIa none

IIb none

Maximal isotypic subgroups and enantiomorphic subgroups of lowest index

IIc $[3]\mu 6/mcc (\mathbf{c}' = 3\mathbf{c}) (74)$

Minimal non-isotypic non-enantiomorphic supergroups

I none

II $[2]\mu 6/mmm (\mathbf{c}' = \frac{1}{2}\mathbf{c}) (73)$