

$\bar{4}/mcc$

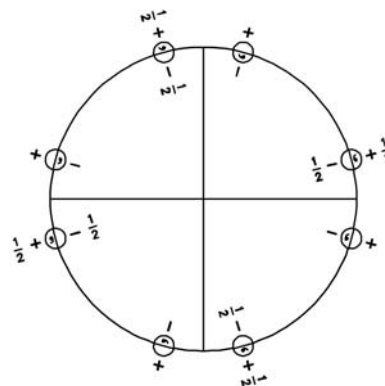
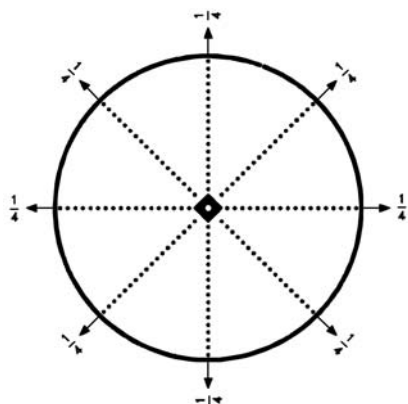
$4/mmm$

Tetragonal

No. 40

$\bar{4}/m2/c2/c$

Patterson symmetry $\bar{4}/mmm$



Origin at centre ($4/m$) at $4/mcc$

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

Symmetry operations

- | | | | |
|-------------------------|-------------------------|---------------------------------|---------------------------------|
| (1) 1 | (2) 2 $0,0,z$ | (3) 4^+ $0,0,z$ | (4) 4^- $0,0,z$ |
| (5) 2 $0,y,\frac{1}{4}$ | (6) 2 $x,0,\frac{1}{4}$ | (7) 2 $x,x,\frac{1}{4}$ | (8) 2 $x,\bar{x},\frac{1}{4}$ |
| (9) $\bar{1}$ $0,0,0$ | (10) m $x,y,0$ | (11) $\bar{4}^+$ $0,0,z; 0,0,0$ | (12) $\bar{4}^-$ $0,0,z; 0,0,0$ |
| (13) c $x,0,z$ | (14) c $0,y,z$ | (15) c x,\bar{x},z | (16) c x,x,z |

Generators selected (1); $t(0,0,1)$; (2); (3); (5); (9)

Positions

Multiplicity, Wyckoff letter, Site symmetry	Coordinates				Reflection conditions
					General:
16 <i>g</i> 1	(1) x, y, z (5) $\bar{x}, y, \bar{z} + \frac{1}{2}$ (9) $\bar{x}, \bar{y}, \bar{z}$ (13) $x, \bar{y}, z + \frac{1}{2}$	(2) \bar{x}, \bar{y}, z (6) $x, \bar{y}, \bar{z} + \frac{1}{2}$ (10) x, y, \bar{z} (14) $\bar{x}, y, z + \frac{1}{2}$	(3) \bar{y}, x, z (7) $y, x, \bar{z} + \frac{1}{2}$ (11) y, \bar{x}, \bar{z} (15) $\bar{y}, \bar{x}, z + \frac{1}{2}$	(4) y, \bar{x}, z (8) $\bar{y}, \bar{x}, \bar{z} + \frac{1}{2}$ (12) \bar{y}, x, \bar{z} (16) $y, x, z + \frac{1}{2}$	$l : l = 2n$
					Special: no extra conditions
8 <i>f</i> $m..$	$x, y, 0$ $\bar{x}, y, \frac{1}{2}$	$\bar{x}, \bar{y}, 0$ $x, \bar{y}, \frac{1}{2}$	$\bar{y}, x, 0$ $y, x, \frac{1}{2}$	$y, \bar{x}, 0$ $\bar{y}, \bar{x}, \frac{1}{2}$	
8 <i>e</i> $.2..$	$x, 0, \frac{1}{4}$ $\bar{x}, 0, \frac{3}{4}$	$\bar{x}, 0, \frac{1}{4}$ $x, 0, \frac{3}{4}$	$0, x, \frac{1}{4}$ $0, \bar{x}, \frac{3}{4}$	$0, \bar{x}, \frac{1}{4}$ $0, x, \frac{3}{4}$	
8 <i>d</i> $..2$	$x, x, \frac{1}{4}$ $\bar{x}, \bar{x}, \frac{3}{4}$	$\bar{x}, \bar{x}, \frac{1}{4}$ $x, x, \frac{3}{4}$	$\bar{x}, x, \frac{1}{4}$ $x, \bar{x}, \frac{3}{4}$	$x, \bar{x}, \frac{1}{4}$ $\bar{x}, x, \frac{3}{4}$	
4 <i>c</i> $4..$	$0, 0, z$	$0, 0, \bar{z} + \frac{1}{2}$	$0, 0, \bar{z}$	$0, 0, z + \frac{1}{2}$	
2 <i>b</i> $4/m..$	$0, 0, 0$	$0, 0, \frac{1}{2}$			
2 <i>a</i> 422	$0, 0, \frac{1}{4}$	$0, 0, \frac{3}{4}$			

Symmetry of special projections

Along [001] $4mm$

Along [100] $\mu 2mm$

Along [110] $\mu 2mm$

Origin at $0, 0, z$

$\mathbf{a}' = \frac{1}{2}\mathbf{c}$
Origin at $x, 0, 0$

$\mathbf{a}' = \frac{1}{2}\mathbf{c}$
Origin at $x, x, 0$

Maximal non-isotypic non-enantiomorphic subgroups

I	$[2]\mu 42c$ (38)	1; 2; 5; 6; 11; 12; 15; 16
	$[2]\mu 4c2$ ($\mu 42c$, 38)	1; 2; 7; 8; 11; 12; 13; 14
	$[2]\mu 4cc$ (36)	1; 2; 3; 4; 13; 14; 15; 16
	$[2]\mu 422$ (30)	1; 2; 3; 4; 5; 6; 7; 8
	$[2]\mu 4/m11$ ($\mu 4/m$, 28)	1; 2; 3; 4; 9; 10; 11; 12
	$[2]\mu 2/m2/c1$ (μccm , 21)	1; 2; 5; 6; 9; 10; 13; 14
	$[2]\mu 2/m12/c$ (μccm , 21)	1; 2; 7; 8; 9; 10; 15; 16

IIa none

IIb none

Maximal isotypic subgroups and enantiomorphic subgroups of lowest index

IIc $[3]\mu 4/mcc$ ($\mathbf{c}' = 3\mathbf{c}$) (40)

Minimal non-isotypic non-enantiomorphic supergroups

I none

II $[2]\mu 4/mmm$ ($\mathbf{c}' = \frac{1}{2}\mathbf{c}$) (39)