

$\bar{4}/m$

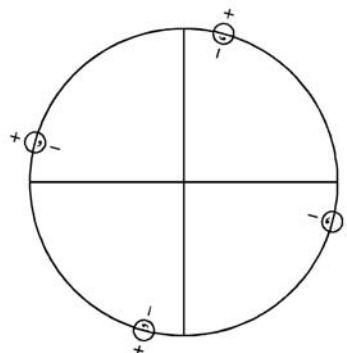
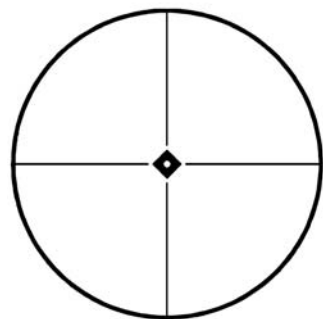
$4/m$

Tetragonal

No. 28

$\bar{4}/m$

Patterson symmetry  $\bar{4}/m$



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

**Asymmetric unit**  $0 \leq x; 0 \leq y; 0 \leq z \leq \frac{1}{2}$

**Symmetry operations**

- |  |                                    |   |   |
|--|------------------------------------|---|---|
| (1) 1<br>(1 0,0,0)                           | (2) 2 $0,0,z$<br>( $2_z$  0,0,0)   | (3) $4^+$ $0,0,z$<br>( $4_z^+$  0,0,0)                    | (4) $4^-$ $0,0,z$<br>( $4_z^-$  0,0,0)                    |
| (5) $\bar{1}$ $0,0,0$<br>( $\bar{1}$  0,0,0) | (6) $m$ $x,y,0$<br>( $m_z$  0,0,0) | (7) $\bar{4}^+$ $0,0,z; 0,0,0$<br>( $\bar{4}_z^+$  0,0,0) | (8) $\bar{4}^-$ $0,0,z; 0,0,0$<br>( $\bar{4}_z^-$  0,0,0) |

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

**Positions**

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

**Symmetry of special projections**

Along [001] 4	Along [100] $\neq 2mm$	Along [110] $\neq 2mm$
	$\mathbf{a}' = \mathbf{c}$	$\mathbf{a}' = \mathbf{c}$
Origin at $0, 0, z$	Origin at $x, 0, 0$	Origin at $x, x, 0$

**Maximal non-isotypic non-enantiomorphic subgroups**

<b>I</b>	$[2] \neq 4 (27)$	1; 2; 7; 8
	$[2] \neq 4 (23)$	1; 2; 3; 4
	$[2] \neq 112/m (11)$	1; 2; 5; 6

**IIa** none

**IIb**  $[2] \neq 4_2/m (\mathbf{c}' = 2\mathbf{c}) (29)$

**Maximal isotypic subgroups and enantiomorphic subgroups of lowest index**

**IIc**  $[2] \neq 4/m (\mathbf{c}' = 2\mathbf{c}) (28)$

**Minimal non-isotypic non-enantiomorphic supergroups**

**I**  $[2] \neq 4/mmm (39)$ ;  $[2] \neq 4/mcc (40)$

**II** none