

$\bar{4}22$

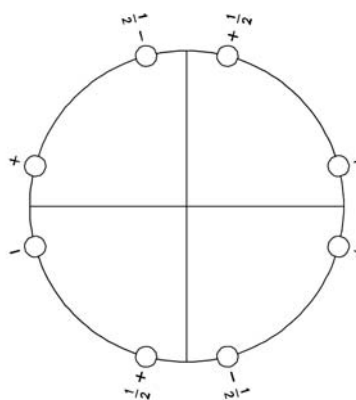
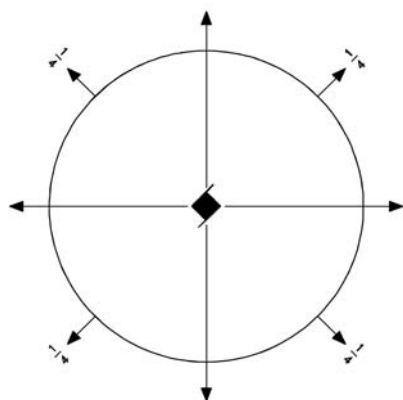
422

Tetragonal

No. 32

$\bar{4}22$

Patterson symmetry $\bar{4}/mmm$



Origin at 222 at 4_221

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

Symmetry operations

- | | | | |
|--|--|--|--|
| (1) 1
(1 0,0,0) | (2) 2 $0,0,z$
(2 _z 0,0,0) | (3) 4 ⁺ ($\frac{1}{2}$) $0,0,z$
(4 _z ⁺ 0,0, $\frac{1}{2}$) | (4) 4 ⁻ ($\frac{1}{2}$) $0,0,z$
(4 _z ⁻ 0,0, $\frac{1}{2}$) |
| (5) 2 $0,y,0$
(2 _y 0,0,0) | (6) 2 $x,0,0$
(2 _x 0,0,0) | (7) 2 $x,x,\frac{1}{4}$
(2 _{xy} 0,0, $\frac{1}{2}$) | (8) 2 $x,\bar{x},\frac{1}{4}$
(2 _{xy} ⁻ 0,0, $\frac{1}{2}$) |

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

Positions

Multiplicity, Wyckoff letter, Site symmetry		Coordinates				Reflection conditions
						General:
8	<i>h</i> 1	(1) x, y, z (5) \bar{x}, y, \bar{z}	(2) \bar{x}, \bar{y}, z (6) x, \bar{y}, \bar{z}	(3) $\bar{y}, x, z + \frac{1}{2}$ (7) $y, x, \bar{z} + \frac{1}{2}$	(4) $y, \bar{x}, z + \frac{1}{2}$ (8) $\bar{y}, \bar{x}, \bar{z} + \frac{1}{2}$	$l : l = 2n$
						Special: no extra conditions
4	<i>g</i> . . 2	$x, x, \frac{3}{4}$	$\bar{x}, \bar{x}, \frac{3}{4}$	$\bar{x}, x, \frac{1}{4}$	$x, \bar{x}, \frac{1}{4}$	
4	<i>f</i> . . 2	$x, x, \frac{1}{4}$	$\bar{x}, \bar{x}, \frac{1}{4}$	$\bar{x}, x, \frac{3}{4}$	$x, \bar{x}, \frac{3}{4}$	
4	<i>e</i> . 2 .	$x, 0, \frac{1}{2}$	$\bar{x}, 0, \frac{1}{2}$	$0, x, 0$	$0, \bar{x}, 0$	
4	<i>d</i> . 2 .	$x, 0, 0$	$\bar{x}, 0, 0$	$0, x, \frac{1}{2}$	$0, \bar{x}, \frac{1}{2}$	
4	<i>c</i> 2 . .	$0, 0, z$	$0, 0, z + \frac{1}{2}$	$0, 0, \bar{z}$	$0, 0, \bar{z} + \frac{1}{2}$	
2	<i>b</i> 2 . 22	$0, 0, \frac{1}{4}$	$0, 0, \frac{3}{4}$			
2	<i>a</i> 2 22 .	$0, 0, 0$	$0, 0, \frac{1}{2}$			

Symmetry of special projections

Along [001] $4mm$

Along [100] $\not\propto 2mm$

Along [110] $\not\propto 2mm$

Origin at $0, 0, z$

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

$\mathbf{a}' = \mathbf{c}$
Origin at $x, x, \frac{1}{4}$

Maximal non-isotypic non-enantiomorphic subgroups

- I** [2] $\not\propto 4_2 11$ ($\not\propto 4_2, 25$) 1; 2; 3; 4
 [2] $\not\propto 221$ ($\not\propto 222, 13$) 1; 2; 5; 6
 [2] $\not\propto 212$ ($\not\propto 222, 13$) 1; 2; 7; 8

IIa none

IIb [2] $\not\propto 4_3 22$ ($\mathbf{c}' = 2\mathbf{c}$) (33); [2] $\not\propto 4_1 22$ ($\mathbf{c}' = 2\mathbf{c}$) (31)

Maximal isotypic subgroups and enantiomorphic subgroups of lowest index

IIc [3] $\not\propto 4_2 22$ ($\mathbf{c}' = 3\mathbf{c}$) (32)

Minimal non-isotypic non-enantiomorphic supergroups

I [2] $\not\propto 4_2 / m m c$ (41)

II [2] $\not\propto 422$ ($\mathbf{c}' = \frac{1}{2}\mathbf{c}$) (30)