

$p\bar{4}m2$

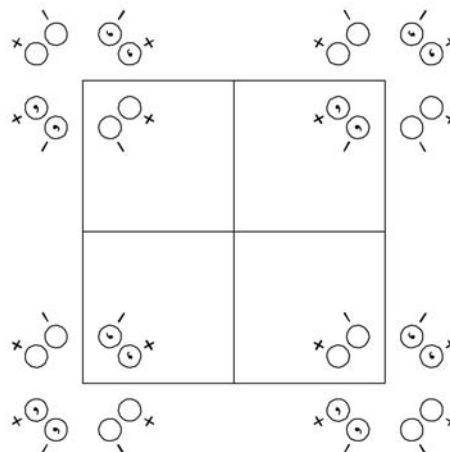
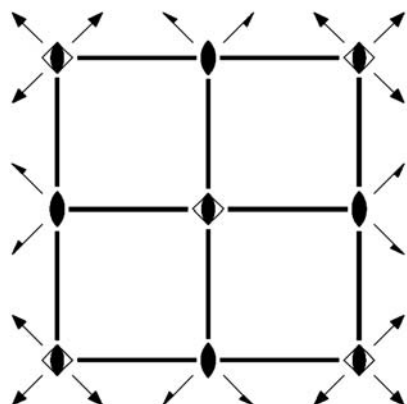
$\bar{4}m2$

Tetragonal/Square

No. 59

$p\bar{4}m2$

Patterson symmetry $p4/mmm$



Origin at $\bar{4}m2$

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

Symmetry operations

- | | | | |
|----------------------------------|--|---|---|
| (1) 1
(1 0,0,0) | (2) 2 0,0,z
(2 _z 0,0,0) | (3) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z^+$ 0,0,0) | (4) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^-$ 0,0,0) |
| (5) m x,0,z
(m_y 0,0,0) | (6) m 0,y,z
(m_x 0,0,0) | (7) 2 x,x,0
(2 _{xy} 0,0,0) | (8) 2 x, \bar{x} ,0
(2 _{xy} 0,0,0) |

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

Positions

Multiplicity, Wyckoff letter, Site symmetry	Coordinates	Reflection conditions	
		General:	Special:
8 <i>i</i> 1	(1) x, y, z (2) \bar{x}, \bar{y}, z (3) y, \bar{x}, \bar{z} (4) \bar{y}, x, \bar{z} (5) x, \bar{y}, z (6) \bar{x}, y, z (7) y, x, \bar{z} (8) $\bar{y}, \bar{x}, \bar{z}$	no conditions	
4 <i>h</i> . <i>m</i> .	$x, \frac{1}{2}, z$ $\bar{x}, \frac{1}{2}, z$ $\frac{1}{2}, \bar{x}, \bar{z}$ $\frac{1}{2}, x, \bar{z}$	no extra conditions	
4 <i>g</i> . <i>m</i> .	$x, 0, z$ $\bar{x}, 0, z$ $0, \bar{x}, \bar{z}$ $0, x, \bar{z}$	no extra conditions	
4 <i>f</i> . . 2	$x, x, 0$ $\bar{x}, \bar{x}, 0$ $x, \bar{x}, 0$ $\bar{x}, x, 0$	no extra conditions	
2 <i>e</i> 2 <i>mm</i> .	$0, \frac{1}{2}, z$ $\frac{1}{2}, 0, \bar{z}$	$hk: h+k=2n$	
2 <i>d</i> 2 <i>mm</i> .	$\frac{1}{2}, \frac{1}{2}, z$ $\frac{1}{2}, \frac{1}{2}, \bar{z}$	no extra conditions	
2 <i>c</i> 2 <i>mm</i> .	$0, 0, z$ $0, 0, \bar{z}$	no extra conditions	
1 <i>b</i> $\bar{4}m2$	$\frac{1}{2}, \frac{1}{2}, 0$	no extra conditions	
1 <i>a</i> $\bar{4}m2$	$0, 0, 0$	no extra conditions	

Symmetry of special projections

Along [001] $p4mm$
 $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$
 Origin at $0, 0, z$

Along [100] $\neq 1m1$
 $\mathbf{a}' = \mathbf{b}$
 Origin at $x, 0, 0$

Along [110] $\neq 2mm$
 $\mathbf{a}' = \frac{1}{2}(-\mathbf{a} + \mathbf{b})$
 Origin at $x, x, 0$

Maximal non-isotypic subgroups

I [2] $p\bar{4}11$ ($p\bar{4}$, 50) 1; 2; 3; 4
 [2] $p2m1$ ($pmm2$, 23) 1; 2; 5; 6
 [2] $p212$ ($c222$, 22) 1; 2; 7; 8

IIa none

IIb [2] $c\bar{4}m2_1$ ($\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$) ($p\bar{4}2_1m$, 58); [2] $c\bar{4}m2$ ($\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$) ($p\bar{4}2m$, 57)

Maximal isotypic subgroups of lowest index

IIc [9] $p\bar{4}m2$ ($\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 3\mathbf{b}$) (59)

Minimal non-isotypic supergroups

I [2] $p4/mmm$ (61); [2] $p4/nmm$ (64)

II [2] $c\bar{4}m2$ ($p\bar{4}2m$, 57)