

$pm\bar{m}2$

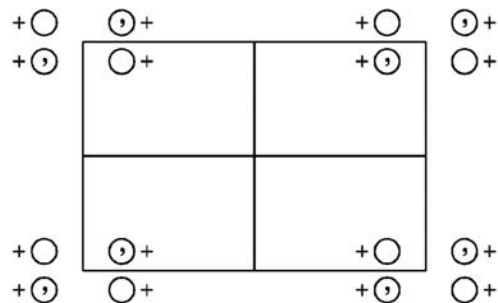
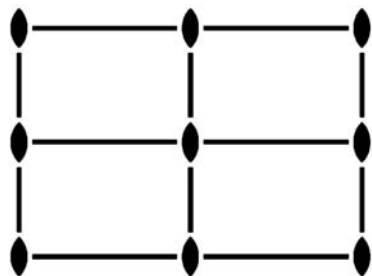
$mm2$

Orthorhombic/Rectangular

No. 23

$pm\bar{m}2$

Patterson symmetry  $pmmm$



Origin on  $mm2$

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

Symmetry operations

- (1) 1      (2) 2  $0,0,z$       (3)  $m$   $x,0,z$       (4)  $m$   $0,y,z$

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

**Positions**

Multiplicity, Wyckoff letter, Site symmetry	Coordinates				Reflection conditions
					General:
4 <i>i</i> 1	(1) $x, y, z$	(2) $\bar{x}, \bar{y}, z$	(3) $x, \bar{y}, z$	(4) $\bar{x}, y, z$	no conditions Special: no extra conditions
2 <i>h</i> $m..$	$\frac{1}{2}, y, z$	$\frac{1}{2}, \bar{y}, z$			
2 <i>g</i> $m..$	$0, y, z$	$0, \bar{y}, z$			
2 <i>f</i> $.m.$	$x, \frac{1}{2}, z$	$\bar{x}, \frac{1}{2}, z$			
2 <i>e</i> $.m.$	$x, 0, z$	$\bar{x}, 0, z$			
1 <i>d</i> $mm2$	$\frac{1}{2}, \frac{1}{2}, z$				
1 <i>c</i> $mm2$	$\frac{1}{2}, 0, z$				
1 <i>b</i> $mm2$	$0, \frac{1}{2}, z$				
1 <i>a</i> $mm2$	$0, 0, z$				

**Symmetry of special projections**

Along [001]  $p2mm$   
 $\mathbf{a}' = \mathbf{a}$   $\mathbf{b}' = \mathbf{b}$   
 Origin at  $0, 0, z$

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

Along [010]  $\neq 1m1$   
 $\mathbf{a}' = \mathbf{a}$   
 Origin at  $0, y, 0$

**Maximal non-isotypic subgroups**

**I** [2]  $p1m1$  ( $pm11, 11$ ) 1; 3  
 [2]  $pm11$  (11) 1; 4  
 [2]  $p112$  (3) 1; 2

**IIa** none

**IIb** [2]  $cmm2$  ( $\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$ ) (26); [2]  $pma2$  ( $\mathbf{a}' = 2\mathbf{a}$ ) (24); [2]  $pbm2$  ( $\mathbf{b}' = 2\mathbf{b}$ ) ( $pma2, 24$ )

**Maximal isotypic subgroups of lowest index**

**IIc** [2]  $pmm2$  ( $\mathbf{a}' = 2\mathbf{a}$  or  $\mathbf{b}' = 2\mathbf{b}$ ) (23)

**Minimal non-isotypic supergroups**

**I** [2]  $pmmm$  (37); [2]  $pmma$  (41); [2]  $pmmn$  (46); [2]  $p4mm$  (55); [2]  $p\bar{4}m2$  (59)

**II** [2]  $cmm2$  (26)