

$c2mm$

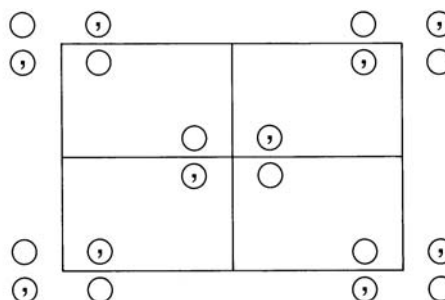
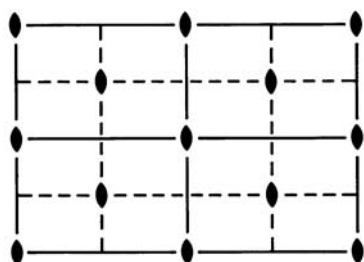
$2mm$

Rectangular

No. 9

$c2mm$

Patterson symmetry $c2mm$



Origin at $2mm$

Asymmetric unit $0 \leq x \leq \frac{1}{4}$; $0 \leq y \leq \frac{1}{2}$

Symmetry operations

For $(0,0)+$ set

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

For $(\frac{1}{2},\frac{1}{2})+$ set

- (1) $t(\frac{1}{2},\frac{1}{2})$ (2) 2 $\frac{1}{4},\frac{1}{4}$ (3) b $\frac{1}{4},y$ (4) a $x,\frac{1}{4}$

Generators selected (1); $t(1,0)$; $t(0,1)$; $t(\frac{1}{2},\frac{1}{2})$; (2); (3)

Positions

Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

$(0,0)+$ $(\frac{1}{2},\frac{1}{2})+$

8 f 1 (1) x,y (2) \bar{x},\bar{y} (3) \bar{x},y (4) x,\bar{y}

4 e $.m.$ $0,y$ $0,\bar{y}$

4 d $.m$ $x,0$ $\bar{x},0$

4 c $2..$ $\frac{1}{4},\frac{1}{4}$ $\frac{3}{4},\frac{1}{4}$

2 b $2mm$ $0,\frac{1}{2}$

2 a $2mm$ $0,0$

Reflection conditions

General:

$hk: h+k=2n$

$h0: h=2n$

$0k: k=2n$

Special: as above, plus

no extra conditions

no extra conditions

$hk: h=2n$

no extra conditions

no extra conditions

Maximal non-isomorphic subgroups

- I** [2] $c1m1$ (cm , 5) (1; 3)+
 [2] $c11m$ (cm , 5) (1; 4)+
 [2] $c211$ ($p2$, 2) (1; 2)+

- IIa** [2] $p2gg$ (8) 1; 2; (3; 4) + $(\frac{1}{2},\frac{1}{2})$
 [2] $p2gm$ ($p2mg$, 7) 1; 4; (2; 3) + $(\frac{1}{2},\frac{1}{2})$
 [2] $p2mg$ (7) 1; 3; (2; 4) + $(\frac{1}{2},\frac{1}{2})$
 [2] $p2mm$ (6) 1; 2; 3; 4

IIb none

Maximal isomorphic subgroups of lowest index

IIc [3] $c2mm$ ($\mathbf{a}' = 3\mathbf{a}$ or $\mathbf{b}' = 3\mathbf{b}$) (9)

Minimal non-isomorphic supergroups

I [2] $p4mm$ (11); [2] $p4gm$ (12); [3] $p6mm$ (17)

II [2] $p2mm$ ($\mathbf{a}' = \frac{1}{2}\mathbf{a}$, $\mathbf{b}' = \frac{1}{2}\mathbf{b}$) (6)