

$Cmc2_1$

C_{2v}^{12}

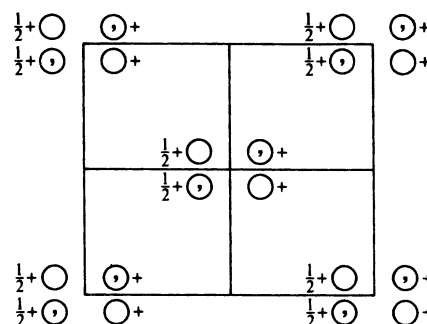
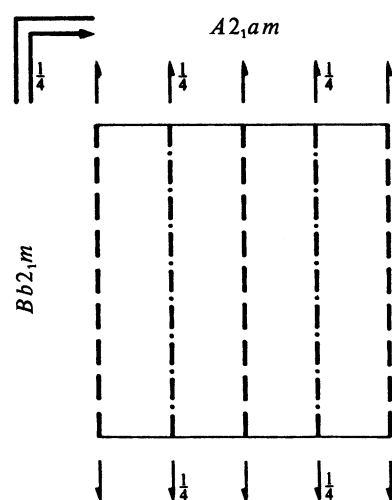
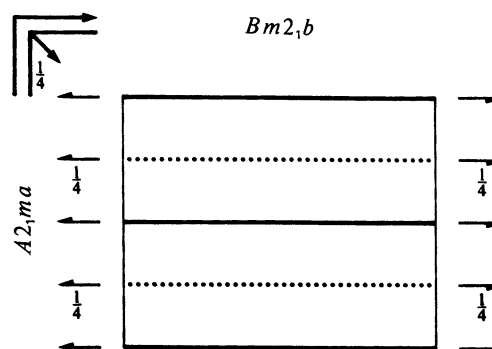
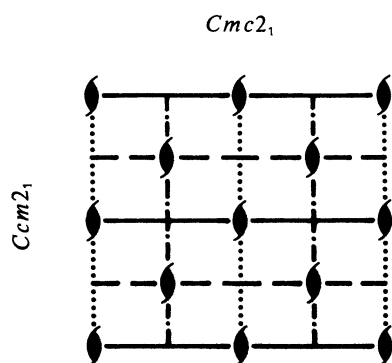
$mm2$

Orthorhombic

No. 36

$Cmc2_1$

Patterson symmetry $Cmmm$



Origin on $mc2_1$

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

Symmetry operations

For $(0,0,0)+$ set

- (1) 1 (2) $2(0,0,\frac{1}{2})$ $0,0,z$ (3) c $x,0,z$ (4) m $0,y,z$

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

- (1) $t(\frac{1}{2},\frac{1}{2},0)$ (2) $2(0,0,\frac{1}{2})$ $\frac{1}{4},\frac{1}{4},z$ (3) $n(\frac{1}{2},0,\frac{1}{2})$ $x,\frac{1}{4},z$ (4) b $\frac{1}{4},y,z$

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

Positions

Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

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

8 b 1 (1) x,y,z (2) $\bar{x},\bar{y},z+\frac{1}{2}$ (3) $x,\bar{y},z+\frac{1}{2}$ (4) \bar{x},y,z

Reflection conditions

General:

$hkl : h+k=2n$

$0kl : k=2n$

$h0l : h,l=2n$

$hk0 : h+k=2n$

$h00 : h=2n$

$0k0 : k=2n$

$00l : l=2n$

Special: no extra conditions

4 a $m..$ $0,y,z$ $0,\bar{y},z+\frac{1}{2}$

Symmetry of special projections

Along [001] $c2mm$

$\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$

Origin at $0,0,z$

Along [100] $p1g1$

$\mathbf{a}' = \frac{1}{2}\mathbf{b}$ $\mathbf{b}' = \mathbf{c}$

Origin at $x,0,0$

Along [010] $p11m$

$\mathbf{a}' = \frac{1}{2}\mathbf{c}$ $\mathbf{b}' = \frac{1}{2}\mathbf{a}$

Origin at $0,y,0$

Maximal non-isomorphic subgroups

I [2] $C1c1$ (Cc , 9) (1; 3)+

[2] $Cm11$ (Cm , 8) (1; 4)+

[2] $C112_1$ ($P2_1$, 4) (1; 2)+

IIa [2] $Pbn2_1$ ($Pna2_1$, 33) 1; 2; (3; 4) + $(\frac{1}{2},\frac{1}{2},0)$

[2] $Pmn2_1$ (31) 1; 4; (2; 3) + $(\frac{1}{2},\frac{1}{2},0)$

[2] $Pbc2_1$ ($Pca2_1$, 29) 1; 3; (2; 4) + $(\frac{1}{2},\frac{1}{2},0)$

[2] $Pmc2_1$ (26) 1; 2; 3; 4

IIb none

Maximal isomorphic subgroups of lowest index

IIc [3] $Cmc2_1$ ($\mathbf{a}' = 3\mathbf{a}$) (36); [3] $Cmc2_1$ ($\mathbf{b}' = 3\mathbf{b}$) (36); [3] $Cmc2_1$ ($\mathbf{c}' = 3\mathbf{c}$) (36)

Minimal non-isomorphic supergroups

I [2] $Cmcm$ (63); [2] $Cmce$ (64); [3] $P6_3cm$ (185); [3] $P6_3mc$ (186)

II [2] $Fmm2$ (42); [2] $Pmc2_1$ ($\mathbf{a}' = \frac{1}{2}\mathbf{a}, \mathbf{b}' = \frac{1}{2}\mathbf{b}$) (26); [2] $Cmm2$ ($\mathbf{c}' = \frac{1}{2}\mathbf{c}$) (35)