

$\bar{3}m m m$

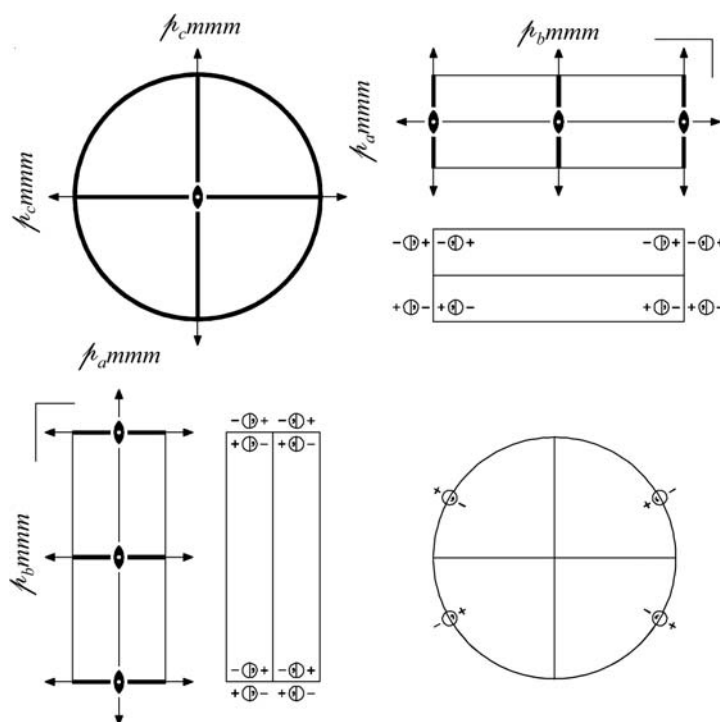
$m m m$

Orthorhombic

No. 20

$\bar{3}2/m 2/m 2/m$

Patterson symmetry $\bar{3}m m m$



Origin at centre (mmm)

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

Symmetry operations

- | | | | |
|-----------------------|-----------------|-----------------|-----------------|
| (1) 1 | (2) 2 $0,0,z$ | (3) 2 $0,y,0$ | (4) 2 $x,0,0$ |
| (5) $\bar{1}$ $0,0,0$ | (6) m $x,y,0$ | (7) m $x,0,z$ | (8) m $0,y,z$ |

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

Positions

Multiplicity, Wyckoff letter, Site symmetry		Coordinates				Reflection conditions
8	l 1	(1) x, y, z (5) $\bar{x}, \bar{y}, \bar{z}$	(2) \bar{x}, \bar{y}, z (6) x, y, \bar{z}	(3) \bar{x}, y, \bar{z} (7) x, \bar{y}, z	(4) x, \bar{y}, \bar{z} (8) \bar{x}, y, z	General: no conditions Special: no extra conditions
4	k $\dots m$	$x, y, \frac{1}{2}$	$\bar{x}, \bar{y}, \frac{1}{2}$	$\bar{x}, y, \frac{1}{2}$	$x, \bar{y}, \frac{1}{2}$	
4	j $\dots m$	$x, y, 0$	$\bar{x}, \bar{y}, 0$	$\bar{x}, y, 0$	$x, \bar{y}, 0$	
4	i $\dots m$	$x, 0, z$	$\bar{x}, 0, z$	$\bar{x}, 0, \bar{z}$	$x, 0, \bar{z}$	
4	h $m \dots$	$0, y, z$	$0, \bar{y}, z$	$0, y, \bar{z}$	$0, \bar{y}, \bar{z}$	
2	g $m m 2$	$0, 0, z$	$0, 0, \bar{z}$			
2	f $m 2 m$	$0, y, \frac{1}{2}$	$0, \bar{y}, \frac{1}{2}$			
2	e $m 2 m$	$0, y, 0$	$0, \bar{y}, 0$			
2	d $2 m m$	$x, 0, \frac{1}{2}$	$\bar{x}, 0, \frac{1}{2}$			
2	c $2 m m$	$x, 0, 0$	$\bar{x}, 0, 0$			
1	b $m m m$	$0, 0, \frac{1}{2}$				
1	a $m m m$	$0, 0, 0$				

Symmetry of special projections

Along [001] $2mm$

Along [100] $\bar{4}2mm$

Along [010] $\bar{4}2mm$

Origin at $0, 0, z$

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

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

Maximal non-isotypic non-enantiomorphic subgroups

I	$[2]\bar{4}m2m (\bar{4}2mm, 18)$	1; 3; 6; 8
	$[2]\bar{4}2mm (18)$	1; 4; 6; 7
	$[2]\bar{4}mm2 (15)$	1; 2; 7; 8
	$[2]\bar{4}222 (13)$	1; 2; 3; 4
	$[2]\bar{4}112/m (11)$	1; 2; 5; 6
	$[2]\bar{4}12/m1 (\bar{4}2/m11, 6)$	1; 3; 5; 7
	$[2]\bar{4}2/m11 (6)$	1; 4; 5; 8

IIa none

IIb $[2]\bar{4}cmm (\mathbf{c}' = 2\mathbf{c}) (\bar{4}mcm, 22)$; $[2]\bar{4}mcm (\mathbf{c}' = 2\mathbf{c}) (22)$; $[2]\bar{4}ccm (\mathbf{c}' = 2\mathbf{c}) (21)$

Maximal isotypic subgroups and enantiomorphic subgroups of lowest index

IIc $[2]\bar{4}mmm (\mathbf{c}' = 2\mathbf{c}) (20)$

Minimal non-isotypic non-enantiomorphic supergroups

I $[2]\bar{4}4/mmm (39)$; $[2]\bar{4}4_2/mmc (41)$; $[3]\bar{4}6/mmm (73)$

II none