

C_{2v}^1 $Pmm2$

No. 25

 $Pmm2$ Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; (2); (3)

General position

Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

4 i 1(1) x, y, z (2) \bar{x}, \bar{y}, z (3) x, \bar{y}, z (4) \bar{x}, y, z I Maximal *translationengleiche* subgroups

[2] $P1m1$ (6)	1; 3	
[2] $Pm11$ (6, $P1m1$)	1; 4	c, a, b
[2] $P112$ (3)	1; 2	

II Maximal *klassengleiche* subgroups

• Enlarged unit cell

[2] $\mathbf{a}' = 2\mathbf{a}$			
$Pma2$ (28)	$\langle 2; 3 + (1,0,0) \rangle$	2a, b, c	
$Pma2$ (28)	$\langle (2; 3) + (1,0,0) \rangle$	2a, b, c	1/2, 0, 0
$Pmm2$ (25)	$\langle 2; 3 \rangle$	2a, b, c	
$Pmm2$ (25)	$\langle 3; 2 + (1,0,0) \rangle$	2a, b, c	1/2, 0, 0
[2] $\mathbf{b}' = 2\mathbf{b}$			
$Pbm2$ (28, $Pma2$)	$\langle 2; 3 + (0,1,0) \rangle$	-2b, a, c	
$Pbm2$ (28, $Pma2$)	$\langle 3; 2 + (0,1,0) \rangle$	-2b, a, c	0, 1/2, 0
$Pmm2$ (25)	$\langle 2; 3 \rangle$	a, 2b, c	
$Pmm2$ (25)	$\langle (2; 3) + (0,1,0) \rangle$	a, 2b, c	0, 1/2, 0
[2] $\mathbf{c}' = 2\mathbf{c}$			
$Pcc2$ (27)	$\langle 2; 3 + (0,0,1) \rangle$	a, b, 2c	
$Pmc2_1$ (26)	$\langle (2; 3) + (0,0,1) \rangle$	a, b, 2c	
$Pcm2_1$ (26, $Pmc2_1$)	$\langle 3; 2 + (0,0,1) \rangle$	-b, a, 2c	
$Pmm2$ (25)	$\langle 2; 3 \rangle$	a, b, 2c	
[2] $\mathbf{b}' = 2\mathbf{b}, \mathbf{c}' = 2\mathbf{c}$			
$Aem2$ (39)	$\langle 2; 3 + (0,1,0) \rangle$	a, 2b, 2c	
$Aem2$ (39)	$\langle 3; 2 + (0,1,0) \rangle$	a, 2b, 2c	0, 1/2, 0
$Amm2$ (38)	$\langle 2; 3 \rangle$	a, 2b, 2c	
$Amm2$ (38)	$\langle (2; 3) + (0,1,0) \rangle$	a, 2b, 2c	0, 1/2, 0
[2] $\mathbf{a}' = 2\mathbf{a}, \mathbf{c}' = 2\mathbf{c}$			
$Bme2$ (39, $Aem2$)	$\langle 2; 3 + (1,0,0) \rangle$	-b, 2a, 2c	
$Bme2$ (39, $Aem2$)	$\langle (2; 3) + (1,0,0) \rangle$	-b, 2a, 2c	1/2, 0, 0
$Bmm2$ (38, $Amm2$)	$\langle 2; 3 \rangle$	-b, 2a, 2c	
$Bmm2$ (38, $Amm2$)	$\langle 3; 2 + (1,0,0) \rangle$	-b, 2a, 2c	1/2, 0, 0
[2] $\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$			
$Cmm2$ (35)	$\langle 2; 3 \rangle$	2a, 2b, c	
$Cmm2$ (35)	$\langle 3; 2 + (1,0,0) \rangle$	2a, 2b, c	1/2, 0, 0
$Cmm2$ (35)	$\langle (2; 3) + (0,1,0) \rangle$	2a, 2b, c	0, 1/2, 0
$Cmm2$ (35)	$\langle 2 + (1,1,0); 3 + (0,1,0) \rangle$	2a, 2b, c	1/2, 1/2, 0
[2] $\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}, \mathbf{c}' = 2\mathbf{c}$			
$Fmm2$ (42)	$\langle 2; 3 \rangle$	2a, 2b, 2c	
$Fmm2$ (42)	$\langle 3; 2 + (1,0,0) \rangle$	2a, 2b, 2c	1/2, 0, 0
$Fmm2$ (42)	$\langle (2; 3) + (0,1,0) \rangle$	2a, 2b, 2c	0, 1/2, 0
$Fmm2$ (42)	$\langle 2 + (1,1,0); 3 + (0,1,0) \rangle$	2a, 2b, 2c	1/2, 1/2, 0
[3] $\mathbf{a}' = 3\mathbf{a}$			
$Pmm2$ (25)	$\langle 2; 3 \rangle$	3a, b, c	
$Pmm2$ (25)	$\langle 3; 2 + (2,0,0) \rangle$	3a, b, c	1, 0, 0
$Pmm2$ (25)	$\langle 3; 2 + (4,0,0) \rangle$	3a, b, c	2, 0, 0
[3] $\mathbf{b}' = 3\mathbf{b}$			
$Pmm2$ (25)	$\langle 2; 3 \rangle$	a, 3b, c	
$Pmm2$ (25)	$\langle (2; 3) + (0,2,0) \rangle$	a, 3b, c	0, 1, 0
$Pmm2$ (25)	$\langle (2; 3) + (0,4,0) \rangle$	a, 3b, c	0, 2, 0
[3] $\mathbf{c}' = 3\mathbf{c}$			
$Pmm2$ (25)	$\langle 2; 3 \rangle$	a, b, 3c	

• **Series of maximal isomorphic subgroups**

<p>[<i>p</i>] a' = <i>pa</i> <i>Pmm2</i> (25)</p>	<p>$\langle 3; 2 + (2u, 0, 0) \rangle$ $p > 2; 0 \leq u < p$ <i>p</i> conjugate subgroups for the prime <i>p</i></p>	<p><i>pa, b, c</i></p>	<p><i>u, 0, 0</i></p>
<p>[<i>p</i>] b' = <i>pb</i> <i>Pmm2</i> (25)</p>	<p>$\langle (2; 3) + (0, 2u, 0) \rangle$ $p > 2; 0 \leq u < p$ <i>p</i> conjugate subgroups for the prime <i>p</i></p>	<p><i>a, pb, c</i></p>	<p><i>0, u, 0</i></p>
<p>[<i>p</i>] c' = <i>pc</i> <i>Pmm2</i> (25)</p>	<p>$\langle 2; 3 \rangle$ $p > 1$ no conjugate subgroups</p>	<p><i>a, b, pc</i></p>	

I Minimal *translationengleiche* supergroups

[2] *Pmmm* (47); [2] *Pmma* (51); [2] *Pmnn* (59); [2] *P4mm* (99); [2] *P4₂mc* (105); [2] *P4̄m2* (115)

II Minimal non-isomorphic *klassengleiche* supergroups

• **Additional centring translations**

[2] *Cnm2* (35); [2] *Amm2* (38); [2] *Bmm2* (38, *Amm2*); [2] *Imm2* (44)

• **Decreased unit cell**

none