

$C_{2v}^{14}$ 
 $Amm2$ 

No. 38

 $Amm2$ 
**Generators selected** (1);  $t(1,0,0)$ ;  $t(0,1,0)$ ;  $t(0,0,1)$ ;  $t(0, \frac{1}{2}, \frac{1}{2})$ ; (2); (3)

**General position**

 Multiplicity,  
Wyckoff letter,  
Site symmetry

Coordinates

 8  $f$  1

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

 (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] $A1m1$ (8, $C1m1$ )	(1; 3)+	$\mathbf{c}, \mathbf{b}, -\mathbf{a} - \mathbf{c}$
[2] $Am11$ (6, $P1m1$ )	(1; 4)+	$1/2(\mathbf{b} + \mathbf{c}), \mathbf{a}, 1/2(\mathbf{b} - \mathbf{c})$
[2] $A112$ (5)	(1; 2)+	

**II Maximal klassengleiche subgroups**

## • Loss of centring translations

[2] $Pnm2_1$ (31, $Pmn2_1$ )	1; 3; (2; 4) + $(0, \frac{1}{2}, \frac{1}{2})$	$-\mathbf{b}, \mathbf{a}, \mathbf{c}$
[2] $Pnc2$ (30)	1; 2; (3; 4) + $(0, \frac{1}{2}, \frac{1}{2})$	
[2] $Pmc2_1$ (26)	1; 4; (2; 3) + $(0, \frac{1}{2}, \frac{1}{2})$	0, 1/4, 0
[2] $Pmm2$ (25)	1; 2; 3; 4	

## • Enlarged unit cell

[2] $\mathbf{a}' = 2\mathbf{a}$		
$Ima2$ (46)	$\langle 2; 3 + (1, 0, 0) \rangle$	$2\mathbf{a}, \mathbf{b}, \mathbf{c}$
$Ima2$ (46)	$\langle (2; 3) + (1, 0, 0) \rangle$	$2\mathbf{a}, \mathbf{b}, \mathbf{c}$ 1/2, 0, 0
$Imm2$ (44)	$\langle 2; 3 \rangle$	$2\mathbf{a}, \mathbf{b}, \mathbf{c}$
$Imm2$ (44)	$\langle 3; 2 + (1, 0, 0) \rangle$	$2\mathbf{a}, \mathbf{b}, \mathbf{c}$ 1/2, 0, 0
$Ama2$ (40)	$\langle 2; 3 + (1, 0, 0) \rangle$	$2\mathbf{a}, \mathbf{b}, \mathbf{c}$
$Ama2$ (40)	$\langle (2; 3) + (1, 0, 0) \rangle$	$2\mathbf{a}, \mathbf{b}, \mathbf{c}$ 1/2, 0, 0
$Amm2$ (38)	$\langle 2; 3 \rangle$	$2\mathbf{a}, \mathbf{b}, \mathbf{c}$
$Amm2$ (38)	$\langle 3; 2 + (1, 0, 0) \rangle$	$2\mathbf{a}, \mathbf{b}, \mathbf{c}$ 1/2, 0, 0
[3] $\mathbf{a}' = 3\mathbf{a}$		
$Amm2$ (38)	$\langle 2; 3 \rangle$	$3\mathbf{a}, \mathbf{b}, \mathbf{c}$
$Amm2$ (38)	$\langle 3; 2 + (2, 0, 0) \rangle$	$3\mathbf{a}, \mathbf{b}, \mathbf{c}$ 1, 0, 0
$Amm2$ (38)	$\langle 3; 2 + (4, 0, 0) \rangle$	$3\mathbf{a}, \mathbf{b}, \mathbf{c}$ 2, 0, 0
[3] $\mathbf{b}' = 3\mathbf{b}$		
$Amm2$ (38)	$\langle 2; 3 \rangle$	$\mathbf{a}, 3\mathbf{b}, \mathbf{c}$
$Amm2$ (38)	$\langle (2; 3) + (0, 2, 0) \rangle$	$\mathbf{a}, 3\mathbf{b}, \mathbf{c}$ 0, 1, 0
$Amm2$ (38)	$\langle (2; 3) + (0, 4, 0) \rangle$	$\mathbf{a}, 3\mathbf{b}, \mathbf{c}$ 0, 2, 0
[3] $\mathbf{c}' = 3\mathbf{c}$		
$Amm2$ (38)	$\langle 2; 3 \rangle$	$\mathbf{a}, \mathbf{b}, 3\mathbf{c}$

## • Series of maximal isomorphic subgroups

[ $p$ ] $\mathbf{a}' = p\mathbf{a}$		
$Amm2$ (38)	$\langle 3; 2 + (2u, 0, 0) \rangle$ prime $p > 2$ ; $0 \leq u < p$ $p$ conjugate subgroups	$p\mathbf{a}, \mathbf{b}, \mathbf{c}$ $u, 0, 0$
[ $p$ ] $\mathbf{b}' = p\mathbf{b}$		
$Amm2$ (38)	$\langle (2; 3) + (0, 2u, 0) \rangle$ prime $p > 2$ ; $0 \leq u < p$ $p$ conjugate subgroups	$\mathbf{a}, p\mathbf{b}, \mathbf{c}$ $0, u, 0$
[ $p$ ] $\mathbf{c}' = p\mathbf{c}$		
$Amm2$ (38)	$\langle 2; 3 \rangle$ prime $p > 2$ no conjugate subgroups	$\mathbf{a}, \mathbf{b}, p\mathbf{c}$

**I Minimal translationengleiche supergroups**

 [2]  $Cmcm$  (63); [2]  $Cmmm$  (65); [3]  $P\bar{6}m2$  (187); [3]  $P\bar{6}2m$  (189)

**II Minimal non-isomorphic klassengleiche supergroups**

## • Additional centring translations

 [2]  $Fmm2$  (42)

## • Decreased unit cell

 [2]  $\mathbf{b}' = \frac{1}{2}\mathbf{b}, \mathbf{c}' = \frac{1}{2}\mathbf{c}$   $Pmm2$  (25)