

Ima2

No. 46

Ima2 C_{2v}^{22} Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; $t(\frac{1}{2},\frac{1}{2},\frac{1}{2})$; (2); (3)

General position

Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

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

8 c 1

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

[2] <i>I1a1</i> (9, <i>C1c1</i>)	(1; 3)+	$-\mathbf{a}-\mathbf{c}, \mathbf{b}, \mathbf{a}$	
[2] <i>Im11</i> (8, <i>C1m1</i>)	(1; 4)+	$-\mathbf{b}-\mathbf{c}, \mathbf{a}, \mathbf{c}$	1/4, 0, 0
[2] <i>I112</i> (5, <i>A112</i>)	(1; 2)+	$\mathbf{b}, -\mathbf{a}-\mathbf{b}, \mathbf{c}$	

II Maximal *klassengleiche* subgroups

• Loss of centring translations

[2] <i>Pna2</i> ₁ (33)	1; 3; (2; 4) + $(\frac{1}{2}, \frac{1}{2}, \frac{1}{2})$		1/4, 1/4, 0
[2] <i>Pnc2</i> (30)	1; 2; (3; 4) + $(\frac{1}{2}, \frac{1}{2}, \frac{1}{2})$		
[2] <i>Pma2</i> (28)	1; 2; 3; 4		
[2] <i>Pmc2</i> ₁ (26)	1; 4; (2; 3) + $(\frac{1}{2}, \frac{1}{2}, \frac{1}{2})$		1/4, 1/4, 0

• Enlarged unit cell

[3] $\mathbf{a}' = 3\mathbf{a}$			
$\left\{ \begin{array}{l} \textit{Ima2} \text{ (46)} \\ \textit{Ima2} \text{ (46)} \\ \textit{Ima2} \text{ (46)} \end{array} \right.$	$\langle 2; 3 + (1, 0, 0) \rangle$	$3\mathbf{a}, \mathbf{b}, \mathbf{c}$	
	$\langle 2 + (2, 0, 0); 3 + (1, 0, 0) \rangle$	$3\mathbf{a}, \mathbf{b}, \mathbf{c}$	1, 0, 0
	$\langle 2 + (4, 0, 0); 3 + (1, 0, 0) \rangle$	$3\mathbf{a}, \mathbf{b}, \mathbf{c}$	2, 0, 0
[3] $\mathbf{b}' = 3\mathbf{b}$			
$\left\{ \begin{array}{l} \textit{Ima2} \text{ (46)} \\ \textit{Ima2} \text{ (46)} \\ \textit{Ima2} \text{ (46)} \end{array} \right.$	$\langle 2; 3 \rangle$	$\mathbf{a}, 3\mathbf{b}, \mathbf{c}$	
	$\langle (2; 3) + (0, 2, 0) \rangle$	$\mathbf{a}, 3\mathbf{b}, \mathbf{c}$	0, 1, 0
	$\langle (2; 3) + (0, 4, 0) \rangle$	$\mathbf{a}, 3\mathbf{b}, \mathbf{c}$	0, 2, 0
[3] $\mathbf{c}' = 3\mathbf{c}$			
<i>Ima2</i> (46)	$\langle 2; 3 \rangle$	$\mathbf{a}, \mathbf{b}, 3\mathbf{c}$	

• Series of maximal isomorphic subgroups

[<i>p</i>] $\mathbf{a}' = p\mathbf{a}$			
<i>Ima2</i> (46)	$\langle 2 + (2u, 0, 0); 3 + (\frac{p}{2} - \frac{1}{2}, 0, 0) \rangle$ prime $p > 2$; $0 \leq u < p$ p conjugate subgroups	$p\mathbf{a}, \mathbf{b}, \mathbf{c}$	$u, 0, 0$
[<i>p</i>] $\mathbf{b}' = p\mathbf{b}$			
<i>Ima2</i> (46)	$\langle (2; 3) + (0, 2u, 0) \rangle$ prime $p > 2$; $0 \leq u < p$ p conjugate subgroups	$\mathbf{a}, p\mathbf{b}, \mathbf{c}$	$0, u, 0$
[<i>p</i>] $\mathbf{c}' = p\mathbf{c}$			
<i>Ima2</i> (46)	$\langle 2; 3 \rangle$ prime $p > 2$ no conjugate subgroups	$\mathbf{a}, \mathbf{b}, p\mathbf{c}$	

I Minimal *translationengleiche* supergroups[2] *Ibam* (72); [2] *Imma* (74)II Minimal non-isomorphic *klassengleiche* supergroups

• Additional centring translations

none

• Decreased unit cell

[2] $\mathbf{c}' = \frac{1}{2}\mathbf{c}$ *Cmm2* (35); [2] $\mathbf{a}' = \frac{1}{2}\mathbf{a}$ *Amm2* (38); [2] $\mathbf{b}' = \frac{1}{2}\mathbf{b}$ *Bme2* (39, *Aem2*)