

D_{2h}^{25}

$I2/m2/m2/m$

No. 71

$Immm$

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); (5)

General position

Multiplicity,	Coordinates
Wyckoff letter,	(0,0,0)+ $(\frac{1}{2},\frac{1}{2},\frac{1}{2})+$
Site symmetry	
16 <i>o</i> 1	(1) x,y,z (2) \bar{x},\bar{y},z (3) \bar{x},y,\bar{z} (4) x,\bar{y},\bar{z}
	(5) \bar{x},\bar{y},\bar{z} (6) x,y,\bar{z} (7) x,\bar{y},z (8) \bar{x},y,z

I Maximal translationengleiche subgroups

[2] $Imm2$ (44)	(1; 2; 7; 8)+	
[2] $Im2m$ (44, $Imm2$)	(1; 3; 6; 8)+	c, a, b
[2] $I2mm$ (44, $Imm2$)	(1; 4; 6; 7)+	b, c, a
[2] $I222$ (23)	(1; 2; 3; 4)+	
[2] $I112/m$ (12, $A112/m$)	(1; 2; 5; 6)+	b, -a - b, c
[2] $I12/m1$ (12, $C12/m1$)	(1; 3; 5; 7)+	-a - c, b, a
[2] $I2/m11$ (12, $C12/m1$)	(1; 4; 5; 8)+	-b + c, a, b

II Maximal klassengleiche subgroups

• Loss of centring translations

[2] $Pmmm$ (59)	1; 2; 7; 8; (3; 4; 5; 6) + $(\frac{1}{2},\frac{1}{2},\frac{1}{2})$		1/4, 1/4, 1/4
[2] $Pmmm$ (59, $Pmmm$)	1; 3; 6; 8; (2; 4; 5; 7) + $(\frac{1}{2},\frac{1}{2},\frac{1}{2})$	c, a, b	1/4, 1/4, 1/4
[2] $Pnmm$ (59, $Pnmm$)	1; 4; 6; 7; (2; 3; 5; 8) + $(\frac{1}{2},\frac{1}{2},\frac{1}{2})$	b, c, a	1/4, 1/4, 1/4
[2] $Pnmm$ (58)	1; 2; 5; 6; (3; 4; 7; 8) + $(\frac{1}{2},\frac{1}{2},\frac{1}{2})$		
[2] $Pnmm$ (58, $Pnmm$)	1; 3; 5; 7; (2; 4; 6; 8) + $(\frac{1}{2},\frac{1}{2},\frac{1}{2})$	c, a, b	
[2] $Pmnn$ (58, $Pnmm$)	1; 4; 5; 8; (2; 3; 6; 7) + $(\frac{1}{2},\frac{1}{2},\frac{1}{2})$	b, c, a	
[2] $Pnnn$ (48)	1; 2; 3; 4; (5; 6; 7; 8) + $(\frac{1}{2},\frac{1}{2},\frac{1}{2})$		1/4, 1/4, 1/4
[2] $Pmmm$ (47)	1; 2; 3; 4; 5; 6; 7; 8		

• Enlarged unit cell

[3] $a' = 3a$			
$\left\{ \begin{array}{l} Imm (71) \\ Imm (71) \\ Imm (71) \end{array} \right.$	$\langle 2; 3; 5 \rangle$ $\langle (2; 3; 5) + (2, 0, 0) \rangle$ $\langle (2; 3; 5) + (4, 0, 0) \rangle$	3a, b, c 3a, b, c 3a, b, c	1, 0, 0 2, 0, 0
[3] $b' = 3b$			
$\left\{ \begin{array}{l} Imm (71) \\ Imm (71) \\ Imm (71) \end{array} \right.$	$\langle 2; 3; 5 \rangle$ $\langle 3; (2; 5) + (0, 2, 0) \rangle$ $\langle 3; (2; 5) + (0, 4, 0) \rangle$	a, 3b, c a, 3b, c a, 3b, c	0, 1, 0 0, 2, 0
[3] $c' = 3c$			
$\left\{ \begin{array}{l} Imm (71) \\ Imm (71) \\ Imm (71) \end{array} \right.$	$\langle 2; 3; 5 \rangle$ $\langle 2; (3; 5) + (0, 0, 2) \rangle$ $\langle 2; (3; 5) + (0, 0, 4) \rangle$	a, b, 3c a, b, 3c a, b, 3c	0, 0, 1 0, 0, 2

• Series of maximal isomorphic subgroups

[<i>p</i>] $a' = pa$			
$Imm (71)$	$\langle (2; 3; 5) + (2u, 0, 0) \rangle$ $p > 2; 0 \leq u < p$ <i>p</i> conjugate subgroups for the prime <i>p</i>	pa, b, c	<i>u</i> , 0, 0
[<i>p</i>] $b' = pb$			
$Imm (71)$	$\langle 3; (2; 5) + (0, 2u, 0) \rangle$ $p > 2; 0 \leq u < p$ <i>p</i> conjugate subgroups for the prime <i>p</i>	a, pb, c	0, <i>u</i> , 0
[<i>p</i>] $c' = pc$			
$Imm (71)$	$\langle 2; (3; 5) + (0, 0, 2u) \rangle$ $p > 2; 0 \leq u < p$ <i>p</i> conjugate subgroups for the prime <i>p</i>	a, b, pc	0, 0, <i>u</i>

I Minimal translationengleiche supergroups

[2] $I4/mmm$ (139); [3] $Im\bar{3}$ (204)

II Minimal non-isomorphic klassengleiche supergroups

- Additional centring translations none
- Decreased unit cell

[2] $a' = \frac{1}{2}a$ $Ammm$ (65, $Cmmm$); [2] $b' = \frac{1}{2}b$ $Bmmm$ (65, $Cmmm$); [2] $c' = \frac{1}{2}c$ $Cmmm$ (65)