

D_{2h}^{17}
 $C2/m2/c2_1/m$

No. 63

 $Cmcm$
Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; $t(\frac{1}{2},\frac{1}{2},0)$; (2); (3); (5)

General position

 Multiplicity,
Wyckoff letter,
Site symmetry

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

 16 *h* 1

(1) x, y, z	(2) $\bar{x}, \bar{y}, z + \frac{1}{2}$	(3) $\bar{x}, y, \bar{z} + \frac{1}{2}$	(4) x, \bar{y}, \bar{z}
(5) $\bar{x}, \bar{y}, \bar{z}$	(6) $x, y, \bar{z} + \frac{1}{2}$	(7) $x, \bar{y}, z + \frac{1}{2}$	(8) \bar{x}, y, z

I Maximal translationengleiche subgroups

[2] $C2cm$ (40, $Ama2$)	(1; 4; 6; 7)+	c, b, -a	
[2] $Cm2m$ (38, $Anm2$)	(1; 3; 6; 8)+	c, a, b	0, 0, 1/4
[2] $Cmc2_1$ (36)	(1; 2; 7; 8)+		
[2] $C222_1$ (20)	(1; 2; 3; 4)+		
[2] $C12/c1$ (15)	(1; 3; 5; 7)+		
[2] $C2/m11$ (12, $C12/m1$)	(1; 4; 5; 8)+	-b, a, c	
[2] $C112_1/m$ (11, $P112_1/m$)	(1; 2; 5; 6)+	$1/2(a-b), 1/2(a+b), c$	

II Maximal klassengleiche subgroups

• Loss of centring translations

[2] $Pbnm$ (62, $Pnma$)	1; 2; 5; 6; (3; 4; 7; 8) + $(\frac{1}{2}, \frac{1}{2}, 0)$	b, c, a	
[2] $Pmcn$ (62, $Pnma$)	1; 2; 7; 8; (3; 4; 5; 6) + $(\frac{1}{2}, \frac{1}{2}, 0)$	c, a, b	1/4, 1/4, 0
[2] $Pbcn$ (60)	1; 3; 5; 7; (2; 4; 6; 8) + $(\frac{1}{2}, \frac{1}{2}, 0)$		
[2] $Pmnm$ (59, $Pmnm$)	1; 3; 6; 8; (2; 4; 5; 7) + $(\frac{1}{2}, \frac{1}{2}, 0)$	c, a, b	1/4, 1/4, 0
[2] $Pmnn$ (58, $Pnmm$)	1; 4; 5; 8; (2; 3; 6; 7) + $(\frac{1}{2}, \frac{1}{2}, 0)$	b, c, a	
[2] $Pbcm$ (57)	1; 4; 6; 7; (2; 3; 5; 8) + $(\frac{1}{2}, \frac{1}{2}, 0)$		1/4, 1/4, 0
[2] $Pbnn$ (52, $Pnna$)	1; 2; 3; 4; (5; 6; 7; 8) + $(\frac{1}{2}, \frac{1}{2}, 0)$	b, c, a	1/4, 1/4, 0
[2] $Pmcm$ (51, $Pmma$)	1; 2; 3; 4; 5; 6; 7; 8	c, a, b	

• Enlarged unit cell

[3] $a' = 3a$			
$\left\{ \begin{array}{l} Cmcm \text{ (63)} \\ Cmcm \text{ (63)} \\ Cmcm \text{ (63)} \end{array} \right.$	$\langle 2; 3; 5 \rangle$	3a, b, c	
	$\langle (2; 3; 5) + (2, 0, 0) \rangle$	3a, b, c	1, 0, 0
	$\langle (2; 3; 5) + (4, 0, 0) \rangle$	3a, b, c	2, 0, 0
[3] $b' = 3b$			
$\left\{ \begin{array}{l} Cmcm \text{ (63)} \\ Cmcm \text{ (63)} \\ Cmcm \text{ (63)} \end{array} \right.$	$\langle 2; 3; 5 \rangle$	a, 3b, c	
	$\langle 3; (2; 5) + (0, 2, 0) \rangle$	a, 3b, c	0, 1, 0
	$\langle 3; (2; 5) + (0, 4, 0) \rangle$	a, 3b, c	0, 2, 0
[3] $c' = 3c$			
$\left\{ \begin{array}{l} Cmcm \text{ (63)} \\ Cmcm \text{ (63)} \\ Cmcm \text{ (63)} \end{array} \right.$	$\langle 5; (2; 3) + (0, 0, 1) \rangle$	a, b, 3c	
	$\langle 2 + (0, 0, 1); 3 + (0, 0, 3); 5 + (0, 0, 2) \rangle$	a, b, 3c	0, 0, 1
	$\langle 2 + (0, 0, 1); 3 + (0, 0, 5); 5 + (0, 0, 4) \rangle$	a, b, 3c	0, 0, 2

• Series of maximal isomorphic subgroups

[p] $a' = pa$			
$Cmcm$ (63)	$\langle (2; 3; 5) + (2u, 0, 0) \rangle$	pa, b, c	$u, 0, 0$
	$p > 2; 0 \leq u < p$		
	p conjugate subgroups for the prime p		
[p] $b' = pb$			
$Cmcm$ (63)	$\langle 3; (2; 5) + (0, 2u, 0) \rangle$	a, pb, c	$0, u, 0$
	$p > 2; 0 \leq u < p$		
	p conjugate subgroups for the prime p		
[p] $c' = pc$			
$Cmcm$ (63)	$\langle 2 + (0, 0, \frac{p}{2} - \frac{1}{2}); 3 + (0, 0, \frac{p}{2} - \frac{1}{2} + 2u); 5 + (0, 0, 2u) \rangle$	a, b, pc	$0, 0, u$
	$p > 2; 0 \leq u < p$		
	p conjugate subgroups for the prime p		

I Minimal translationengleiche supergroups[3] $P6_3/mcm$ (193); [3] $P6_3/mmc$ (194)**II Minimal non-isomorphic klassengleiche supergroups**

- Additional centring translations

[2] $Fmmm$ (69)

- Decreased unit cell

[2] $\mathbf{a}' = \frac{1}{2}\mathbf{a}$, $\mathbf{b}' = \frac{1}{2}\mathbf{b}$ $Pmcm$ (51, $Pmma$); [2] $\mathbf{c}' = \frac{1}{2}\mathbf{c}$ $Cmmm$ (65)**I Minimal translationengleiche supergroups**

none

II Minimal non-isomorphic klassengleiche supergroups

- Additional centring translations

[2] $Fmmm$ (69)

- Decreased unit cell

[2] $\mathbf{a}' = \frac{1}{2}\mathbf{a}$, $\mathbf{b}' = \frac{1}{2}\mathbf{b}$ $Pmcm$ (51, $Pmma$); [2] $\mathbf{c}' = \frac{1}{2}\mathbf{c}$ $Cmme$ (67)