$P4/mbm$ No. 127 $P4/m\,2_1/b\,2/m$ D_{4h}^{5}

Generators selected   (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; (2); (3); (5); (9)

General position

Multiplicity,
Wyckoff letter,
Site symmetry

<div style="text-align:center">Coordinates</div>

16   l 1

(1) x,y,z (2) $\bar{x},\bar{y},z$ (3) $\bar{y},x,z$ (4) $y,\bar{x},z$

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

(9) $\bar{x},\bar{y},\bar{z}$ (10) $x,y,\bar{z}$ (11) $y,\bar{x},\bar{z}$ (12) $\bar{y},x,\bar{z}$

(13) $x+\frac{1}{2},\bar{y}+\frac{1}{2},z$ (14) $\bar{x}+\frac{1}{2},y+\frac{1}{2},z$ (15) $\bar{y}+\frac{1}{2},\bar{x}+\frac{1}{2},z$ (16) $y+\frac{1}{2},x+\frac{1}{2},z$

I Maximal *translationengleiche* subgroups

[2] $P\bar{4}b2$ (117)	1; 2; 7; 8; 11; 12; 13; 14		
[2] $P\bar{4}2_1m$ (113)	1; 2; 5; 6; 11; 12; 15; 16		
[2] $P4bm$ (100)	1; 2; 3; 4; 13; 14; 15; 16		
[2] $P42_12$ (90)	1; 2; 3; 4; 5; 6; 7; 8		$0,1/2,0$
[2] $P4/m11$ (83, $P4/m$)	1; 2; 3; 4; 9; 10; 11; 12		
[2] $P2/m12/m$ (65, $Cmmm$)	1; 2; 7; 8; 9; 10; 15; 16	$\mathbf{a}-\mathbf{b},\mathbf{a}+\mathbf{b},\mathbf{c}$	$0,1/2,0$
[2] $P2/m2_1/b1$ (55, $Pbam$)	1; 2; 5; 6; 9; 10; 13; 14		

II Maximal *klassengleiche* subgroups

• **Enlarged unit cell**

[2] $\mathbf{c}'=2\mathbf{c}$

$P4_2/mnm$ (136)	$\langle 2;\ 9;\ (3;\ 5)+(0,0,1)\rangle$	$\mathbf{a},\mathbf{b},2\mathbf{c}$	$0,1/2,0$
$P4_2/mnm$ (136)	$\langle 2;\ 5;\ (3;\ 9)+(0,0,1)\rangle$	$\mathbf{a},\mathbf{b},2\mathbf{c}$	$0,1/2,1/2$
$P4_2/mbc$ (135)	$\langle 2;\ 5;\ 9;\ 3+(0,0,1)\rangle$	$\mathbf{a},\mathbf{b},2\mathbf{c}$	
$P4_2/mbc$ (135)	$\langle 2;\ (3;\ 5;\ 9)+(0,0,1)\rangle$	$\mathbf{a},\mathbf{b},2\mathbf{c}$	$0,0,1/2$
$P4/mnc$ (128)	$\langle 2;\ 3;\ 9;\ 5+(0,0,1)\rangle$	$\mathbf{a},\mathbf{b},2\mathbf{c}$	
$P4/mnc$ (128)	$\langle 2;\ 3;\ 5;\ 9+(0,0,1)\rangle$	$\mathbf{a},\mathbf{b},2\mathbf{c}$	$0,0,1/2$
$P4/mbm$ (127)	$\langle 2;\ 3;\ 5;\ 9\rangle$	$\mathbf{a},\mathbf{b},2\mathbf{c}$	
$P4/mbm$ (127)	$\langle 2;\ 3;\ (5;\ 9)+(0,0,1)\rangle$	$\mathbf{a},\mathbf{b},2\mathbf{c}$	$0,0,1/2$

[3] $\mathbf{c}'=3\mathbf{c}$

$\Big\{$ $P4/mbm$ (127)	$\langle 2;\ 3;\ 5;\ 9\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	
$P4/mbm$ (127)	$\langle 2;\ 3;\ (5;\ 9)+(0,0,2)\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	$0,0,1$
$\Big\{$ $P4/mbm$ (127)	$\langle 2;\ 3;\ (5;\ 9)+(0,0,4)\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	$0,0,2$

• **Series of maximal isomorphic subgroups**

[p] $\mathbf{c}'=p\mathbf{c}$

$P4/mbm$ (127)	$\langle 2;\ 3;\ (5;\ 9)+(0,0,2u)\rangle$	$\mathbf{a},\mathbf{b},p\mathbf{c}$	$0,0,u$
	$p>2;\ 0\le u<p$		
	p conjugate subgroups for the prime p		

[p^2] $\mathbf{a}'=p\mathbf{a}$, $\mathbf{b}'=p\mathbf{b}$

$P4/mbm$ (127)	$\langle (2;\ 9)+(2u,2v,0);\ 3+(u+v,-u+v,0);$	$p\mathbf{a},p\mathbf{b},\mathbf{c}$	$u,v,0$
	$5+(p-\frac{1}{2}+2u,p-\frac{1}{2},0)\rangle$		
	$p>2;\ 0\le u<p;\ 0\le v<p$		
	p^2 conjugate subgroups for the prime p		

I Minimal *translationengleiche* supergroups   none

II Minimal non-isomorphic *klassengleiche* supergroups

• **Additional centring translations**

[2] $C4/mmm$ (123, $P4/mmm$); [2] $I4/mcm$ (140)

• **Decreased unit cell**   none