$Pccn$ No. 56 $P2_1/c2_1/c2/n$ D_{2h}^{10}

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

General position

Multiplicity, Wyckoff letter, Site symmetry	Coordinates
8 e 1	(1) x,y,z (2) $\bar{x}+\frac{1}{2},\bar{y}+\frac{1}{2},z$ (3) $\bar{x},y+\frac{1}{2},\bar{z}+\frac{1}{2}$ (4) $x+\frac{1}{2},\bar{y},\bar{z}+\frac{1}{2}$
	(5) $\bar{x},\bar{y},\bar{z}$ (6) $x+\frac{1}{2},y+\frac{1}{2},\bar{z}$ (7) $x,\bar{y}+\frac{1}{2},z+\frac{1}{2}$ (8) $\bar{x}+\frac{1}{2},y,z+\frac{1}{2}$

I Maximal *translationengleiche* subgroups

[2] $Pc2_1n$ (33, $Pna2_1$)	1; 3; 6; 8	$\mathbf{c},\mathbf{a},\mathbf{b}$	$0,0,1/4$
[2] $P2_1cn$ (33, $Pna2_1$)	1; 4; 6; 7	$\mathbf{c},\mathbf{b},-\mathbf{a}$	$0,0,1/4$
[2] $Pcc2$ (27)	1; 2; 7; 8		$1/4,1/4,0$
[2] $P2_12_12$ (18)	1; 2; 3; 4		$1/4,1/4,1/4$
[2] $P12_1/c1$ (14)	1; 3; 5; 7		
[2] $P2_1/c11$ (14, $P12_1/c1$)	1; 4; 5; 8	$-\mathbf{b},\mathbf{a},\mathbf{c}$	
[2] $P112/n$ (13, $P112/a$)	1; 2; 5; 6	$-\mathbf{a}-\mathbf{b},\mathbf{a},\mathbf{c}$	

II Maximal *klassengleiche* subgroups

- **Enlarged unit cell**

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

$Pccn$ (56)	$\langle 3;\ 5;\ 2+(1,0,0)\rangle$	$3\mathbf{a},\mathbf{b},\mathbf{c}$	
$Pccn$ (56)	$\langle 2+(3,0,0);\ (3;\ 5)+(2,0,0)\rangle$	$3\mathbf{a},\mathbf{b},\mathbf{c}$	$1,0,0$
$Pccn$ (56)	$\langle 2+(5,0,0);\ (3;\ 5)+(4,0,0)\rangle$	$3\mathbf{a},\mathbf{b},\mathbf{c}$	$2,0,0$

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

$Pccn$ (56)	$\langle 5;\ (2;\ 3)+(0,1,0)\rangle$	$\mathbf{a},3\mathbf{b},\mathbf{c}$	
$Pccn$ (56)	$\langle 2+(0,3,0);\ 3+(0,1,0);\ 5+(0,2,0)\rangle$	$\mathbf{a},3\mathbf{b},\mathbf{c}$	$0,1,0$
$Pccn$ (56)	$\langle 2+(0,5,0);\ 3+(0,1,0);\ 5+(0,4,0)\rangle$	$\mathbf{a},3\mathbf{b},\mathbf{c}$	$0,2,0$

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

$Pccn$ (56)	$\langle 2;\ 5;\ 3+(0,0,1)\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	
$Pccn$ (56)	$\langle 2;\ 3+(0,0,3);\ 5+(0,0,2)\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	$0,0,1$
$Pccn$ (56)	$\langle 2;\ 3+(0,0,5);\ 5+(0,0,4)\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	$0,0,2$

- **Series of maximal isomorphic subgroups**

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

$Pccn$ (56)	$\langle 2+(\frac{p}{2}-\frac{1}{2}+2u,0,0);\ (3;\ 5)+(2u,0,0)\rangle$ $p>2;\ 0\le u<p$ p conjugate subgroups for the prime p	$p\mathbf{a},\mathbf{b},\mathbf{c}$	$u,0,0$

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

$Pccn$ (56)	$\langle 2+(0,\frac{p}{2}-\frac{1}{2}+2u,0);\ 3+(0,\frac{p}{2}-\frac{1}{2},0);$ $5+(0,2u,0)\rangle$ $p>2;\ 0\le u<p$ p conjugate subgroups for the prime p	$\mathbf{a},p\mathbf{b},\mathbf{c}$	$0,2u,0$

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

$Pccn$ (56)	$\langle 2;\ 3+(0,0,\frac{p}{2}-\frac{1}{2}+2u);\ 5+(0,0,2u)\rangle$ $p>2;\ 0\le u<p$ p conjugate subgroups for the prime p	$\mathbf{a},\mathbf{b},p\mathbf{c}$	$0,0,u$

I Minimal *translationengleiche* supergroups

[2] $P4/ncc$ (130); [2] $P4_2/ncm$ (138)

II Minimal non-isomorphic *klassengleiche* supergroups

- **Additional centring translations**

[2] $Aema$ (64, $Cmce$); [2] $Bmeb$ (64, $Cmce$); [2] $Cccm$ (66); [2] $Ibam$ (72)

- **Decreased unit cell**

[2] $\mathbf{a}'=\frac{1}{2}\mathbf{a}$ $Pccb$ (54, $Pcca$); [2] $\mathbf{b}'=\frac{1}{2}\mathbf{b}$ $Pcca$ (54); [2] $\mathbf{c}'=\frac{1}{2}\mathbf{c}$ $Pmmn$ (59)

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