C_6^1 $P6$ No. 168 $P6$

Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; (2); (4)

General position

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

I Maximal *translationengleiche* subgroups

[2] $P3$ (143)	1; 2; 3	
[3] $P2$ (3, $P112$)	1; 4	

II Maximal *klassengleiche* subgroups

- **Enlarged unit cell**

[2] $\mathbf{c}'=2\mathbf{c}$			
$P6_3$ (173)	$\langle 2;\ 4+(0,0,1)\rangle$	$\mathbf{a},\mathbf{b},2\mathbf{c}$	
$P6$ (168)	$\langle 2;\ 4\rangle$	$\mathbf{a},\mathbf{b},2\mathbf{c}$	
[3] $\mathbf{c}'=3\mathbf{c}$			
$P6_4$ (172)	$\langle 4;\ 2+(0,0,1)\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	
$P6_2$ (171)	$\langle 4;\ 2+(0,0,2)\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	
$P6$ (168)	$\langle 2;\ 4\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	
[3] $\mathbf{a}'=3\mathbf{a},\ \mathbf{b}'=3\mathbf{b}$			
$H6$ (168, $P6$)	$\langle 2;\ 4\rangle$	$\mathbf{a}-\mathbf{b},\mathbf{a}+2\mathbf{b},\mathbf{c}$	
$H6$ (168, $P6$)	$\langle 2+(1,-1,0);\ 4+(2,0,0)\rangle$	$\mathbf{a}-\mathbf{b},\mathbf{a}+2\mathbf{b},\mathbf{c}$	$1,0,0$
$H6$ (168, $P6$)	$\langle 2+(2,-2,0);\ 4+(4,0,0)\rangle$	$\mathbf{a}-\mathbf{b},\mathbf{a}+2\mathbf{b},\mathbf{c}$	$2,0,0$
[4] $\mathbf{a}'=2\mathbf{a},\ \mathbf{b}'=2\mathbf{b}$			
$P6$ (168)	$\langle 2;\ 4\rangle$	$2\mathbf{a},2\mathbf{b},\mathbf{c}$	
$P6$ (168)	$\langle 2+(1,-1,0);\ 4+(2,0,0)\rangle$	$2\mathbf{a},2\mathbf{b},\mathbf{c}$	$1,0,0$
$P6$ (168)	$\langle 2+(1,2,0);\ 4+(0,2,0)\rangle$	$2\mathbf{a},2\mathbf{b},\mathbf{c}$	$0,1,0$
$P6$ (168)	$\langle 2+(2,1,0);\ 4+(2,2,0)\rangle$	$2\mathbf{a},2\mathbf{b},\mathbf{c}$	$1,1,0$

- **Series of maximal isomorphic subgroups**

[p] $\mathbf{c}'=p\mathbf{c}$			
$P6$ (168)	$\langle 2;\ 4\rangle$ $p>1$ no conjugate subgroups	$\mathbf{a},\mathbf{b},p\mathbf{c}$	
[p^2] $\mathbf{a}'=p\mathbf{a},\ \mathbf{b}'=p\mathbf{b}$			
$P6$ (168)	$\langle 2+(u+v,-u+2v,0);\ 4+(2u,2v,0)\rangle$ $p>1;\ 0\le u<p;\ 0\le v<p$ p^2 conjugate subgroups for prime $p\equiv 2\ (\mathrm{mod}\ 3)$	$p\mathbf{a},p\mathbf{b},\mathbf{c}$	$u,v,0$
[$p=q^2+r^2+qr$] $\mathbf{a}'=q\mathbf{a}-r\mathbf{b},\ \mathbf{b}'=r\mathbf{a}+(q+r)\mathbf{b}$			
$P6$ (168)	$\langle 2+(u,-u,0);\ 4+(2u,0,0)\rangle$ $q>0;\ r>0;\ p>2;\ 0\le u<p$ p conjugate subgroups for each pair of q and r	$q\mathbf{a}-r\mathbf{b},r\mathbf{a}+(q+r)\mathbf{b},\mathbf{c}$	$u,0,0$

I Minimal *translationengleiche* supergroups

[2] $P6/m$ (175); [2] $P622$ (177); [2] $P6mm$ (183); [2] $P6cc$ (184)

II Minimal non-isomorphic *klassengleiche* supergroups none

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