C_{3h}^1 $P\bar{6}$ No. 174 $P\bar{6}$

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	l	1	(1) x,y,z	(2) $\bar{y},x-y,z$
			(3) $\bar{x}+y,\bar{x},z$	(4) $x,y,\bar{z}$
			(5) $\bar{y},x-y,\bar{z}$	(6) $\bar{x}+y,\bar{x},\bar{z}$

I Maximal *translationengleiche* subgroups

[2] $P3$ (143)	1; 2; 3	
[3] Pm (6, $P11m$)	1; 4	

II Maximal *klassengleiche* subgroups

- **Enlarged unit cell**

[2] $\mathbf{c}'=2\mathbf{c}$			
$P\bar{6}$ (174)	$\langle 2;\ 4\rangle$	$\mathbf{a},\mathbf{b},2\mathbf{c}$	
$P\bar{6}$ (174)	$\langle 2;\ 4+(0,0,1)\rangle$	$\mathbf{a},\mathbf{b},2\mathbf{c}$	$0,0,1/2$
[3] $\mathbf{c}'=3\mathbf{c}$			
$P\bar{6}$ (174)	$\langle 2;\ 4\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	
$P\bar{6}$ (174)	$\langle 2;\ 4+(0,0,2)\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	$0,0,1$
$P\bar{6}$ (174)	$\langle 2;\ 4+(0,0,4)\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	$0,0,2$
[3] $\mathbf{a}'=3\mathbf{a},\ \mathbf{b}'=3\mathbf{b}$			
$H\bar{6}$ (174, $P\bar{6}$)	$\langle 2;\ 4\rangle$	$\mathbf{a}-\mathbf{b},\mathbf{a}+2\mathbf{b},\mathbf{c}$	
$H\bar{6}$ (174, $P\bar{6}$)	$\langle 4;\ 2+(1,0,0)\rangle$	$\mathbf{a}-\mathbf{b},\mathbf{a}+2\mathbf{b},\mathbf{c}$	$2/3,1/3,0$
$H\bar{6}$ (174, $P\bar{6}$)	$\langle 4;\ 2+(1,1,0)\rangle$	$\mathbf{a}-\mathbf{b},\mathbf{a}+2\mathbf{b},\mathbf{c}$	$1/3,2/3,0$
[4] $\mathbf{a}'=2\mathbf{a},\ \mathbf{b}'=2\mathbf{b}$			
$P\bar{6}$ (174)	$\langle 2;\ 4\rangle$	$2\mathbf{a},2\mathbf{b},\mathbf{c}$	
$P\bar{6}$ (174)	$\langle 4;\ 2+(1,-1,0)\rangle$	$2\mathbf{a},2\mathbf{b},\mathbf{c}$	$1,0,0$
$P\bar{6}$ (174)	$\langle 4;\ 2+(1,2,0)\rangle$	$2\mathbf{a},2\mathbf{b},\mathbf{c}$	$0,1,0$
$P\bar{6}$ (174)	$\langle 4;\ 2+(2,1,0)\rangle$	$2\mathbf{a},2\mathbf{b},\mathbf{c}$	$1,1,0$

- **Series of maximal isomorphic subgroups**

[p] $\mathbf{c}'=p\mathbf{c}$			
$P\bar{6}$ (174)	$\langle 2;\ 4+(0,0,2u)\rangle$ $p>2;\ 0\le u<p$ p conjugate subgroups for the prime p	$\mathbf{a},\mathbf{b},p\mathbf{c}$	$0,0,u$
[p^2] $\mathbf{a}'=p\mathbf{a},\ \mathbf{b}'=p\mathbf{b}$			
$P\bar{6}$ (174)	$\langle 4;\ 2+(u+v,-u+2v,0)\rangle$ $p>1;\ 0\le u<p;\ 0\le v<p$ p^2 conjugate subgroups for prime $p\equiv 2\ (\mathrm{mod}\ 3)$	$p\mathbf{a},p\mathbf{b},\mathbf{c}$	$u,v,0$
[$p=q^2+r^2+qr$] $\mathbf{a}'=q\mathbf{a}-r\mathbf{b},\ \mathbf{b}'=r\mathbf{a}+(q+r)\mathbf{b}$			
$P\bar{6}$ (174)	$\langle 4;\ 2+(u,-u,0)\rangle$ $q>0;\ r>0;\ p>6;\ 0\le u<p$ 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] $P6_3/m$ (176); [2] $P\bar{6}m2$ (187); [2] $P\bar{6}c2$ (188); [2] $P\bar{6}2m$ (189); [2] $P\bar{6}2c$ (190)

II Minimal non-isomorphic *klassengleiche* supergroups none