$P3_121$ No. 152 $P3_121$ D_3^4

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

General position

		Coordinates

Multiplicity,
Wyckoff letter,
Site symmetry

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

I Maximal *translationengleiche* subgroups

[2] $P3_111$ (144, $P3_1$)	1; 2; 3		
[3] $P121$ (5, $C121$)	1; 4	$-\mathbf{a}+\mathbf{b}, -\mathbf{a}-\mathbf{b}, \mathbf{c}$	
[3] $P121$ (5, $C121$)	1; 5	$-\mathbf{a}-2\mathbf{b}, \mathbf{a}, \mathbf{c}$	0,0,1/3
[3] $P121$ (5, $C121$)	1; 6	$2\mathbf{a}+\mathbf{b}, \mathbf{b}, \mathbf{c}$	0,0,2/3

II Maximal *klassengleiche* subgroups

● Enlarged unit cell

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

$P3_221$ (154)	$\langle 4;\ 2+(0,0,1)\rangle$	$\mathbf{a}, \mathbf{b}, 2\mathbf{c}$	
$P3_221$ (154)	$\langle (2;\ 4)+(0,0,1)\rangle$	$\mathbf{a}, \mathbf{b}, 2\mathbf{c}$	0,0,1/2

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

$H3_121$ (151, $P3_112$)	$\langle 2;\ 4\rangle$	$\mathbf{a}-\mathbf{b}, \mathbf{a}+2\mathbf{b}, \mathbf{c}$	0,0,1/3

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

$P3_121$ (152)	$\langle 2;\ 4\rangle$	$2\mathbf{a}, 2\mathbf{b}, \mathbf{c}$	
$P3_121$ (152)	$\langle (2;\ 4)+(1,-1,0)\rangle$	$2\mathbf{a}, 2\mathbf{b}, \mathbf{c}$	1,0,0
$P3_121$ (152)	$\langle 2+(1,2,0);\ 4+(-1,1,0)\rangle$	$2\mathbf{a}, 2\mathbf{b}, \mathbf{c}$	0,1,0
$P3_121$ (152)	$\langle 4;\ 2+(2,1,0)\rangle$	$2\mathbf{a}, 2\mathbf{b}, \mathbf{c}$	1,1,0

● Series of maximal isomorphic subgroups

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

$P3_221$ (154)	$\langle 2+(0,0,\frac{2p}{3}-\frac{1}{3});\ 4+(0,0,2u)\rangle$	$\mathbf{a}, \mathbf{b}, p\mathbf{c}$	0,0,u
	$p > 2;\ 0 \le u < p$		
	p conjugate subgroups for prime $p \equiv 2 \pmod 3$		
$P3_121$ (152)	$\langle 2+(0,0,\frac{p}{3}-\frac{1}{3});\ 4+(0,0,2u)\rangle$	$\mathbf{a}, \mathbf{b}, p\mathbf{c}$	0,0,u
	$p > 6;\ 0 \le u < p$		
	p conjugate subgroups for prime $p \equiv 1 \pmod 3$		

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

$P3_121$ (152)	$\langle 2+(u+v, -u+2v, 0);\ 4+(u-v, -u+v, 0)\rangle$	$p\mathbf{a}, p\mathbf{b}, \mathbf{c}$	u,v,0
	$p > 1;\ p \ne 3;\ 0 \le u < p;\ 0 \le v < p$		
	p^2 conjugate subgroups for the prime p		

I Minimal *translationengleiche* supergroups

[2] $P6_122$ (178); [2] $P6_422$ (181)

II Minimal non-isomorphic *klassengleiche* supergroups

● Additional centring translations

[3] $H3_121$ (151, $P3_112$); [3] $R_{\mathrm{obv}}32$ (155, $R32$); [3] $R_{\mathrm{rev}}32$ (155, $R32$)

● Decreased unit cell

[3] $\mathbf{c}' = \frac{1}{3}\mathbf{c}$ $P321$ (150)