$P4/ncc$ No. 130 $P4/n2_1/c2/c$ D_{4h}^8

ORIGIN CHOICE 1, Origin at $\bar{4}/ncn$, at $-\frac{1}{4},\frac{1}{4},0$ from $\bar{1}$

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

General position

Multiplicity,   Coordinates
Wyckoff letter,
Site symmetry

16	g	1				
			(1) x,y,z	(2) $\bar{x},\bar{y},z$	(3) $\bar{y}+\frac{1}{2},x+\frac{1}{2},z$	(4) $y+\frac{1}{2},\bar{x}+\frac{1}{2},z$
			(5) $\bar{x}+\frac{1}{2},y+\frac{1}{2},\bar{z}+\frac{1}{2}$	(6) $x+\frac{1}{2},\bar{y}+\frac{1}{2},\bar{z}+\frac{1}{2}$	(7) $y,x,\bar{z}+\frac{1}{2}$	(8) $\bar{y},\bar{x},\bar{z}+\frac{1}{2}$
			(9) $\bar{x}+\frac{1}{2},\bar{y}+\frac{1}{2},\bar{z}$	(10) $x+\frac{1}{2},y+\frac{1}{2},\bar{z}$	(11) $y,\bar{x},\bar{z}$	(12) $\bar{y},x,\bar{z}$
			(13) $x,\bar{y},z+\frac{1}{2}$	(14) $\bar{x},y,z+\frac{1}{2}$	(15) $\bar{y}+\frac{1}{2},\bar{x}+\frac{1}{2},z+\frac{1}{2}$	(16) $y+\frac{1}{2},x+\frac{1}{2},z+\frac{1}{2}$

I Maximal *translationengleiche* subgroups

[2] $P\bar{4}c2$ (116)	1; 2; 7; 8; 11; 12; 13; 14		
[2] $P\bar{4}2_1c$ (114)	1; 2; 5; 6; 11; 12; 15; 16		
[2] $P4cc$ (103)	1; 2; 3; 4; 13; 14; 15; 16		$0,1/2,0$
[2] $P42_12$ (90)	1; 2; 3; 4; 5; 6; 7; 8		$0,0,1/4$
[2] $P4/n11$ (85, $P4/n$)	1; 2; 3; 4; 9; 10; 11; 12		
[2] $P2/n12/c$ (68, $Ccce$)	1; 2; 7; 8; 9; 10; 15; 16	$\mathbf{a}-\mathbf{b},\mathbf{a}+\mathbf{b},\mathbf{c}$	$0,0,1/4$
[2] $P2/n2_1/c1$ (56, $Pccn$)	1; 2; 5; 6; 9; 10; 13; 14		$1/4,1/4,0$

II Maximal *klassengleiche* subgroups

• **Enlarged unit cell**

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

$P4/ncc$ (130)	$\langle 2;\ 3;\ 9;\ 5+(0,0,1)\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	
$P4/ncc$ (130)	$\langle 2;\ 3;\ 5+(0,0,3);\ 9+(0,0,2)\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	$0,0,1$
$P4/ncc$ (130)	$\langle 2;\ 3;\ 5+(0,0,5);\ 9+(0,0,4)\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	$0,0,2$

• **Series of maximal isomorphic subgroups**

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

$P4/ncc$ (130)	$\langle 2;\ 3;\ 5+(0,0,\frac{p}{2}-\frac{1}{2}+2u);\ 9+(0,0,2u)\rangle$	$\mathbf{a},\mathbf{b},p\mathbf{c}$	$0,0,u$
	$p>2;\ 0\le u<p$		
	p conjugate subgroups for the prime p		

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

$P4/ncc$ (130)	$\langle 2+(2u,2v,0);\ 3+(\frac{p}{2}-\frac{1}{2}+u+v,\frac{p}{2}-\frac{1}{2}-u+v,0);$	$p\mathbf{a},p\mathbf{b},\mathbf{c}$	$u,v,0$
	$5+(\frac{p}{2}-\frac{1}{2}+2u,\frac{p}{2}-\frac{1}{2},0);$		
	$9+(\frac{p}{2}-\frac{1}{2}+2u,\frac{p}{2}-\frac{1}{2}+2v,0)\rangle$		
	$p>2;\ 0\le u<p;\ 0\le v<p$		
	p^2 conjugate subgroups for the prime p		

I Minimal *translationengleiche* supergroups   none

II Minimal non-isomorphic *klassengleiche* supergroups

• **Additional centring translations**

[2] $C4/mcc$ (124, $P4/mcc$); [2] $I4/mcm$ (140)

• **Decreased unit cell**

[2] $\mathbf{c}' = \frac{1}{2}\mathbf{c}$ $P4/nmm$ (129)