

$O^6$  $P4_3 32$ 

No. 212

 $P4_3 32$ **Generators selected** (1);  $t(1,0,0)$ ;  $t(0,1,0)$ ;  $t(0,0,1)$ ; (2); (3); (5); (13)**General position**

Multiplicity,  
Wyckoff letter,  
Site symmetry

**Coordinates**

24	$e$	1	(1) $x, y, z$	(2) $\bar{x} + \frac{1}{2}, \bar{y}, z + \frac{1}{2}$	(3) $\bar{x}, y + \frac{1}{2}, \bar{z} + \frac{1}{2}$	(4) $x + \frac{1}{2}, \bar{y} + \frac{1}{2}, \bar{z}$
			(5) $z, x, y$	(6) $z + \frac{1}{2}, \bar{x} + \frac{1}{2}, \bar{y}$	(7) $\bar{z} + \frac{1}{2}, \bar{x}, y + \frac{1}{2}$	(8) $\bar{z}, x + \frac{1}{2}, \bar{y} + \frac{1}{2}$
			(9) $y, z, x$	(10) $\bar{y}, z + \frac{1}{2}, \bar{x} + \frac{1}{2}$	(11) $y + \frac{1}{2}, \bar{z} + \frac{1}{2}, \bar{x}$	(12) $\bar{y} + \frac{1}{2}, \bar{z}, x + \frac{1}{2}$
			(13) $y + \frac{1}{4}, x + \frac{3}{4}, \bar{z} + \frac{3}{4}$	(14) $\bar{y} + \frac{1}{4}, \bar{x} + \frac{1}{4}, \bar{z} + \frac{1}{4}$	(15) $y + \frac{3}{4}, \bar{x} + \frac{3}{4}, z + \frac{1}{4}$	(16) $\bar{y} + \frac{3}{4}, x + \frac{1}{4}, z + \frac{3}{4}$
			(17) $x + \frac{1}{4}, z + \frac{3}{4}, \bar{y} + \frac{3}{4}$	(18) $\bar{x} + \frac{3}{4}, z + \frac{1}{4}, y + \frac{3}{4}$	(19) $\bar{x} + \frac{1}{4}, \bar{z} + \frac{1}{4}, \bar{y} + \frac{1}{4}$	(20) $x + \frac{3}{4}, \bar{z} + \frac{3}{4}, y + \frac{1}{4}$
			(21) $z + \frac{1}{4}, y + \frac{3}{4}, \bar{x} + \frac{3}{4}$	(22) $z + \frac{3}{4}, \bar{y} + \frac{3}{4}, x + \frac{1}{4}$	(23) $\bar{z} + \frac{3}{4}, y + \frac{1}{4}, x + \frac{3}{4}$	(24) $\bar{z} + \frac{1}{4}, \bar{y} + \frac{1}{4}, \bar{x} + \frac{1}{4}$

**I Maximal translationengleiche subgroups**

[2] $P2_1 31$ (198, $P2_1 3$ )	1; 2; 3; 4; 5; 6; 7; 8; 9; 10; 11; 12		
{ [3] $P4_3 12$ (96, $P4_3 2_1 2$ )	1; 2; 3; 4; 13; 14; 15; 16		1/4, 0, 3/8
{ [3] $P4_3 12$ (96, $P4_3 2_1 2$ )	1; 4; 2; 3; 18; 19; 17; 20		3/8, 1/4, 0
{ [3] $P4_3 12$ (96, $P4_3 2_1 2$ )	1; 3; 4; 2; 22; 24; 23; 21		0, 3/8, 1/4
{ [4] $P132$ (155, $R32$ )	1; 5; 9; 14; 19; 24	<b>a - b, b - c, a + b + c</b>	1/8, 1/8, 1/8
{ [4] $P132$ (155, $R32$ )	1; 6; 12; 13; 18; 24	<b>-a - b, b + c, -a + b - c</b>	7/8, 5/8, 3/8
{ [4] $P132$ (155, $R32$ )	1; 7; 10; 13; 19; 22	<b>a + b, -b + c, a - b - c</b>	5/8, 3/8, 7/8
{ [4] $P132$ (155, $R32$ )	1; 8; 11; 14; 18; 22	<b>-a + b, -b - c, -a - b + c</b>	3/8, 7/8, 5/8

**II Maximal klassengleiche subgroups****• Enlarged unit cell**

none

**• Series of maximal isomorphic subgroups**

$[p^3]$ $\mathbf{a}' = p\mathbf{a}$ , $\mathbf{b}' = p\mathbf{b}$ , $\mathbf{c}' = p\mathbf{c}$			
$P4_1 32$ (213)	$\langle 2 + (\frac{p}{2} - \frac{1}{2} + 2u, 2v, \frac{p}{2} - \frac{1}{2});$ $3 + (2u, \frac{p}{2} - \frac{1}{2}, \frac{p}{2} - \frac{1}{2} + 2w);$ $5 + (u - w, -u + v, -v + w);$ $13 + (\frac{3p}{4} - \frac{1}{4} + u - v, \frac{p}{4} - \frac{3}{4} - u + v, \frac{p}{4} - \frac{3}{4} + 2w) \rangle$ $p > 2; 0 \leq u < p; 0 \leq v < p; 0 \leq w < p$ $p^3$ conjugate subgroups for prime $p \equiv 3 \pmod{4}$	$p\mathbf{a}, p\mathbf{b}, p\mathbf{c}$	$u, v, w$
$P4_3 32$ (212)	$\langle 2 + (\frac{p}{2} - \frac{1}{2} + 2u, 2v, \frac{p}{2} - \frac{1}{2});$ $3 + (2u, \frac{p}{2} - \frac{1}{2}, \frac{p}{2} - \frac{1}{2} + 2w);$ $5 + (u - w, -u + v, -v + w);$ $13 + (\frac{p}{4} - \frac{1}{4} + u - v, \frac{3p}{4} - \frac{3}{4} - u + v, \frac{3p}{4} - \frac{3}{4} + 2w) \rangle$ $p > 4; 0 \leq u < p; 0 \leq v < p; 0 \leq w < p$ $p^3$ conjugate subgroups for prime $p \equiv 1 \pmod{4}$	$p\mathbf{a}, p\mathbf{b}, p\mathbf{c}$	$u, v, w$

**I Minimal translationengleiche supergroups**

none

**II Minimal non-isomorphic klassengleiche supergroups****• Additional centring translations**[2]  $I4_1 32$  (214); [4]  $F4_1 32$  (210)**• Decreased unit cell**

none