

Square

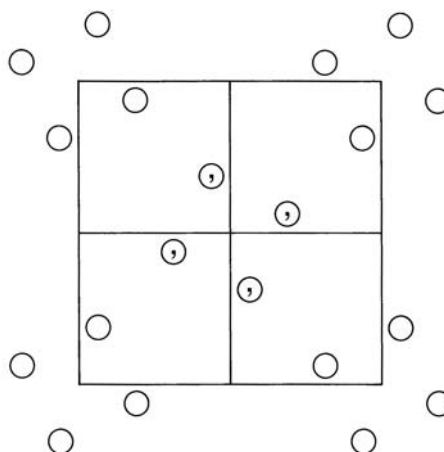
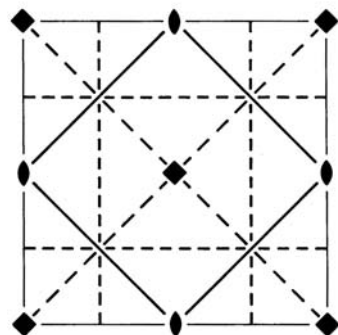
$4mm$

$p4gm$

Patterson symmetry $p4mm$

$p4gm$

No. 12



Origin at $41g$

Asymmetric unit $0 \leq x \leq \frac{1}{2}; 0 \leq y \leq \frac{1}{2}; y \leq \frac{1}{2} - x$

Symmetry operations

- (1) 1 (2) $2\ 0,0$ (3) $4^+ 0,0$ (4) $4^- 0,0$
 (5) $b\ \frac{1}{4},y$ (6) $a\ x,\frac{1}{4}$ (7) $g(\frac{1}{2},\frac{1}{2})\ x,x$ (8) $m\ x+\frac{1}{2},\bar{x}$

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

Positions

Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

Reflection conditions

8	$d\ 1$	(1) x,y (5) $\bar{x}+\frac{1}{2},y+\frac{1}{2}$	(2) \bar{x},\bar{y} (6) $x+\frac{1}{2},\bar{y}+\frac{1}{2}$	(3) \bar{y},x (7) $y+\frac{1}{2},x+\frac{1}{2}$	(4) y,\bar{x} (8) $\bar{y}+\frac{1}{2},\bar{x}+\frac{1}{2}$	General: $h0: h = 2n$ $0k: k = 2n$
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Special: as above, plus

4	$c\ \dots m$	$x,x+\frac{1}{2}$	$\bar{x},\bar{x}+\frac{1}{2}$	$\bar{x}+\frac{1}{2},x$	$x+\frac{1}{2},\bar{x}$	no extra conditions
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2	$b\ 2 \dots mm$	$\frac{1}{2},0$	$0,\frac{1}{2}$			$hk: h+k = 2n$
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2	$a\ 4 \dots$	$0,0$	$\frac{1}{2},\frac{1}{2}$			$hk: h+k = 2n$
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Maximal non-isomorphic subgroups

- I** [2] $p411 (p4, 10)$ 1; 2; 3; 4
 [2] $p21m (c2mm, 9)$ 1; 2; 7; 8
 [2] $p2g1 (p2gg, 8)$ 1; 2; 5; 6

IIa none

IIb none

Maximal isomorphic subgroups of lowest index

IIc [9] $p4gm (a' = 3a, b' = 3b) (12)$

Minimal non-isomorphic supergroups

I none

II [2] $c4gm (p4mm, 11)$