

$P\bar{6}2c$

D_{3h}^4

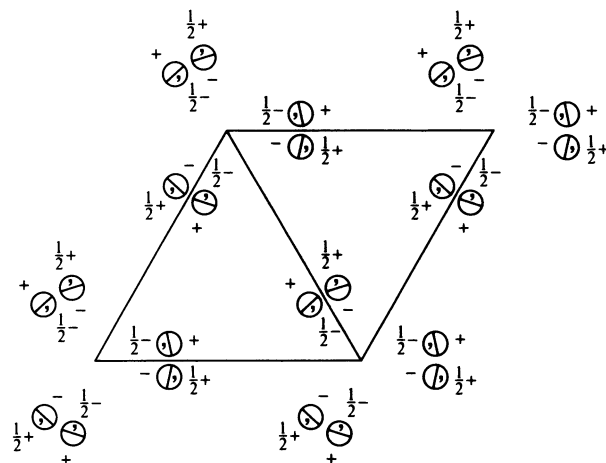
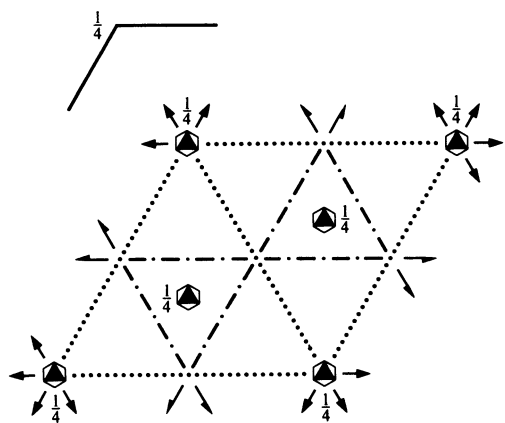
$\bar{6}2m$

Hexagonal

No. 190

$P\bar{6}2c$

Patterson symmetry $P6/mmm$



Origin at $32c$

Asymmetric unit $0 \leq x \leq \frac{2}{3}; 0 \leq y \leq \frac{2}{3}; 0 \leq z \leq \frac{1}{4}; x \leq (1+y)/2; y \leq \min(1-x, (1+x)/2)$

Vertices $0, 0, 0$ $\frac{1}{2}, 0, 0$ $\frac{2}{3}, \frac{1}{3}, 0$ $\frac{1}{3}, \frac{2}{3}, 0$ $0, \frac{1}{2}, 0$
 $0, 0, \frac{1}{4}$ $\frac{1}{2}, 0, \frac{1}{4}$ $\frac{2}{3}, \frac{1}{3}, \frac{1}{4}$ $\frac{1}{3}, \frac{2}{3}, \frac{1}{4}$ $0, \frac{1}{2}, \frac{1}{4}$

Symmetry operations

- | | | |
|-----------------------------|--|--|
| (1) 1 | (2) 3^+ $0, 0, z$ | (3) 3^- $0, 0, z$ |
| (4) m $x, y, \frac{1}{4}$ | (5) $\bar{6}^-$ $0, 0, z; 0, 0, \frac{1}{4}$ | (6) $\bar{6}^+$ $0, 0, z; 0, 0, \frac{1}{4}$ |
| (7) 2 $x, x, 0$ | (8) 2 $x, 0, 0$ | (9) 2 $0, y, 0$ |
| (10) c x, x, z | (11) c $x, 0, z$ | (12) c $0, y, z$ |

Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; (2); (4); (7)

Positions

Multiplicity, Wyckoff letter, Site symmetry	Coordinates						Reflection conditions
							General:
12 <i>i</i> 1	(1) x, y, z (4) $x, y, \bar{z} + \frac{1}{2}$ (7) y, x, \bar{z} (10) $y, x, z + \frac{1}{2}$	(2) $\bar{y}, x - y, z$ (5) $\bar{y}, x - y, \bar{z} + \frac{1}{2}$ (8) $x - y, \bar{y}, \bar{z}$ (11) $x - y, \bar{y}, z + \frac{1}{2}$	(3) $\bar{x} + y, \bar{x}, z$ (6) $\bar{x} + y, \bar{x}, \bar{z} + \frac{1}{2}$ (9) $\bar{x}, \bar{x} + y, \bar{z}$ (12) $\bar{x}, \bar{x} + y, z + \frac{1}{2}$				$hh\bar{2}hl: l = 2n$ $000l: l = 2n$
	Special: as above, plus						
6 <i>h</i> $m..$	$x, y, \frac{1}{4}$	$\bar{y}, x - y, \frac{1}{4}$	$\bar{x} + y, \bar{x}, \frac{1}{4}$	$y, x, \frac{3}{4}$	$x - y, \bar{y}, \frac{3}{4}$	$\bar{x}, \bar{x} + y, \frac{3}{4}$	no extra conditions
6 <i>g</i> $.2.$	$x, 0, 0$	$0, x, 0$	$\bar{x}, \bar{x}, 0$	$x, 0, \frac{1}{2}$	$0, x, \frac{1}{2}$	$\bar{x}, \bar{x}, \frac{1}{2}$	$hkil: l = 2n$
4 <i>f</i> $3..$	$\frac{1}{3}, \frac{2}{3}, z$	$\frac{1}{3}, \frac{2}{3}, \bar{z} + \frac{1}{2}$	$\frac{2}{3}, \frac{1}{3}, \bar{z}$	$\frac{2}{3}, \frac{1}{3}, z + \frac{1}{2}$			$hkil: l = 2n$ or $h - k = 3n + 1$ or $h - k = 3n + 2$
4 <i>e</i> $3..$	$0, 0, z$	$0, 0, \bar{z} + \frac{1}{2}$	$0, 0, \bar{z}$	$0, 0, z + \frac{1}{2}$			$hkil: l = 2n$
2 <i>d</i> $\bar{6}..$	$\frac{2}{3}, \frac{1}{3}, \frac{1}{4}$	$\frac{1}{3}, \frac{2}{3}, \frac{3}{4}$					$hkil: l = 2n$ or $h - k = 3n + 1$ or $h - k = 3n + 2$
2 <i>c</i> $\bar{6}..$	$\frac{1}{3}, \frac{2}{3}, \frac{1}{4}$	$\frac{2}{3}, \frac{1}{3}, \frac{3}{4}$					$hkil: l = 2n$ or $h - k = 3n + 1$ or $h - k = 3n + 2$
2 <i>b</i> $\bar{6}..$	$0, 0, \frac{1}{4}$	$0, 0, \frac{3}{4}$					$hkil: l = 2n$
2 <i>a</i> $32.$	$0, 0, 0$	$0, 0, \frac{1}{2}$					$hkil: l = 2n$

Symmetry of special projections

Along $[001]$ $p31m$
 $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$
 Origin at $0, 0, z$

Along $[100]$ $p2gm$
 $\mathbf{a}' = \frac{1}{2}(\mathbf{a} + 2\mathbf{b})$ $\mathbf{b}' = \mathbf{c}$
 Origin at $x, 0, 0$

Along $[210]$ $p11m$
 $\mathbf{a}' = \frac{1}{2}\mathbf{b}$ $\mathbf{b}' = \frac{1}{2}\mathbf{c}$
 Origin at $x, \frac{1}{2}x, 0$