

MSG No. 180.170  $P6'_22'$  [ Type III, hexagonal ]

Table 1: Wyckoff site: 3a, site symmetry: 2'22'

No.	position	mapping
1	[0, 0, 0]	[1,4,8,11]
2	[0, 0, $\frac{2}{3}$ ]	[2,5,9,12]
3	[0, 0, $\frac{1}{3}$ ]	[3,6,7,10]

Table 2: Wyckoff site: 3b, site symmetry: 2'22'

No.	position	mapping
1	[0, 0, $\frac{1}{2}$ ]	[1,4,8,11]
2	[0, 0, $\frac{1}{6}$ ]	[2,5,9,12]
3	[0, 0, $\frac{5}{6}$ ]	[3,6,7,10]

Table 3: Wyckoff site: 3c, site symmetry: 2'22'

No.	position	mapping
1	[ $\frac{1}{2}$ , 0, 0]	[1,4,8,11]
2	[0, $\frac{1}{2}$ , $\frac{2}{3}$ ]	[2,5,9,12]
3	[ $\frac{1}{2}$ , $\frac{1}{2}$ , $\frac{1}{3}$ ]	[3,6,7,10]

Table 4: Wyckoff site: 3d, site symmetry: 2'22'

No.	position	mapping
1	[ $\frac{1}{2}$ , 0, $\frac{1}{2}$ ]	[1,4,8,11]
2	[0, $\frac{1}{2}$ , $\frac{1}{6}$ ]	[2,5,9,12]
3	[ $\frac{1}{2}$ , $\frac{1}{2}$ , $\frac{5}{6}$ ]	[3,6,7,10]

Table 5: Wyckoff site: 6e, site symmetry: 2'..

No.	position	mapping
1	[0, 0, z]	[1,8]
2	[0, 0, $z + \frac{2}{3}$ ]	[2,9]
3	[0, 0, $z + \frac{1}{3}$ ]	[3,7]
4	[0, 0, -z]	[4,11]
5	[0, 0, $\frac{2}{3} - z$ ]	[5,12]
6	[0, 0, $\frac{1}{3} - z$ ]	[6,10]

Table 6: Wyckoff site: 6f, site symmetry: 2' ..

No.	position	mapping
1	$[\frac{1}{2}, 0, z]$	[1,8]
2	$[0, \frac{1}{2}, z + \frac{2}{3}]$	[2,9]
3	$[\frac{1}{2}, \frac{1}{2}, z + \frac{1}{3}]$	[3,7]
4	$[\frac{1}{2}, 0, -z]$	[4,11]
5	$[0, \frac{1}{2}, \frac{2}{3} - z]$	[5,12]
6	$[\frac{1}{2}, \frac{1}{2}, \frac{1}{3} - z]$	[6,10]

Table 7: Wyckoff site: 6g, site symmetry: .2.

No.	position	mapping
1	$[x, 0, 0]$	[1,4]
2	$[0, x, \frac{2}{3}]$	[2,5]
3	$[-x, -x, \frac{1}{3}]$	[3,6]
4	$[x, x, \frac{1}{3}]$	[7,10]
5	$[-x, 0, 0]$	[8,11]
6	$[0, -x, \frac{2}{3}]$	[9,12]

Table 8: Wyckoff site: 6h, site symmetry: .2.

No.	position	mapping
1	$[x, 0, \frac{1}{2}]$	[1,4]
2	$[0, x, \frac{1}{6}]$	[2,5]
3	$[-x, -x, \frac{5}{6}]$	[3,6]
4	$[x, x, \frac{5}{6}]$	[7,10]
5	$[-x, 0, \frac{1}{2}]$	[8,11]
6	$[0, -x, \frac{1}{6}]$	[9,12]

Table 9: Wyckoff site: 6i, site symmetry: ..2'

No.	position	mapping
1	$[x, 2x, 0]$	[1,11]
2	$[-2x, -x, \frac{2}{3}]$	[2,12]
3	$[x, -x, \frac{1}{3}]$	[3,10]
4	$[-x, -2x, 0]$	[4,8]
5	$[2x, x, \frac{2}{3}]$	[5,9]
6	$[-x, x, \frac{1}{3}]$	[6,7]

Table 10: Wyckoff site: 6j, site symmetry: ...2'

No.	position	mapping
1	$[x, 2x, \frac{1}{2}]$	[1,11]
2	$[-2x, -x, \frac{1}{6}]$	[2,12]
3	$[x, -x, \frac{5}{6}]$	[3,10]
4	$[-x, -2x, \frac{1}{2}]$	[4,8]
5	$[2x, x, \frac{1}{6}]$	[5,9]
6	$[-x, x, \frac{5}{6}]$	[6,7]

Table 11: Wyckoff site: 12k, site symmetry: 1

No.	position	mapping
1	$[x, y, z]$	[1]
2	$[-y, x - y, z + \frac{2}{3}]$	[2]
3	$[-x + y, -x, z + \frac{1}{3}]$	[3]
4	$[x - y, -y, -z]$	[4]
5	$[y, x, \frac{2}{3} - z]$	[5]
6	$[-x, -x + y, \frac{1}{3} - z]$	[6]
7	$[x - y, x, z + \frac{1}{3}]$	[7]
8	$[-x, -y, z]$	[8]
9	$[y, -x + y, z + \frac{2}{3}]$	[9]
10	$[x, x - y, \frac{1}{3} - z]$	[10]
11	$[-x + y, y, -z]$	[11]
12	$[-y, -x, \frac{2}{3} - z]$	[12]