MSG No. 192.247 $P6'/mcc'$ [Type III, hexagonal]

Table 1: Wyckoff site: 2a, site symmetry: 6'2'2

No.	position	mapping
1	$\left[0, 0, \frac{1}{4}\right]$	[1,2,3,4,5,6,13,14,15,16,17,18]
2	$\left[0, 0, \frac{3}{4}\right]$	[7,8,9,10,11,12,19,20,21,22,23,24]

Table 2: Wyckoff site: 2b, site symmetry: 6'/m..

No.	position	mapping
1	$[0, 0, 0]$	[1,2,3,7,8,9,13,14,15,19,20,21]
2	$\left[0, 0, \frac{1}{2}\right]$	[4,5,6,10,11,12,16,17,18,22,23,24]

Table 3: Wyckoff site: 4c, site symmetry: 3.2

No.	position	mapping
1	$\left[\frac{1}{3}, \frac{2}{3}, \frac{1}{4}\right]$	[1,2,3,4,5,6]
2	$\left[\frac{1}{3}, \frac{2}{3}, \frac{3}{4}\right]$	[7,8,9,10,11,12]
3	$\left[\frac{2}{3}, \frac{1}{3}, \frac{1}{4}\right]$	[13,14,15,16,17,18]
4	$\left[\frac{2}{3}, \frac{1}{3}, \frac{3}{4}\right]$	[19,20,21,22,23,24]

Table 4: Wyckoff site: 4d, site symmetry: -6..

No.	position	mapping
1	$\left[\frac{1}{3}, \frac{2}{3}, 0\right]$	[1,2,3,7,8,9]
2	$\left[\frac{1}{3}, \frac{2}{3}, \frac{1}{2}\right]$	[4,5,6,10,11,12]
3	$\left[\frac{2}{3}, \frac{1}{3}, 0\right]$	[13,14,15,19,20,21]
4	$\left[\frac{2}{3}, \frac{1}{3}, \frac{1}{2}\right]$	[16,17,18,22,23,24]

Table 5: Wyckoff site: 4e, site symmetry: 6'..

No.	position	mapping
1	$[0, 0, z]$	[1,2,3,13,14,15]
2	$\left[0, 0, \frac{1}{2} - z\right]$	[4,5,6,16,17,18]
3	$[0, 0, -z]$	[7,8,9,19,20,21]
4	$\left[0, 0, z + \frac{1}{2}\right]$	[10,11,12,22,23,24]

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

No.	position	mapping
1	$\left[\frac{1}{2}, 0, \frac{1}{4}\right]$	[1,5,14,16]
2	$\left[0, \frac{1}{2}, \frac{1}{4}\right]$	[2,6,15,17]
3	$\left[\frac{1}{2}, \frac{1}{2}, \frac{1}{4}\right]$	[3,4,13,18]
4	$\left[\frac{1}{2}, \frac{1}{2}, \frac{3}{4}\right]$	[7,12,21,22]
5	$\left[\frac{1}{2}, 0, \frac{3}{4}\right]$	[8,10,19,23]
6	$\left[0, \frac{1}{2}, \frac{3}{4}\right]$	[9,11,20,24]

Table 7: Wyckoff site: `6g`, site symmetry: `2'/m..`

No.	position	mapping
1	$\left[\frac{1}{2}, 0, 0\right]$	[1,8,14,19]
2	$\left[0, \frac{1}{2}, 0\right]$	[2,9,15,20]
3	$\left[\frac{1}{2}, \frac{1}{2}, 0\right]$	[3,7,13,21]
4	$\left[\frac{1}{2}, \frac{1}{2}, \frac{1}{2}\right]$	[4,12,18,22]
5	$\left[\frac{1}{2}, 0, \frac{1}{2}\right]$	[5,10,16,23]
6	$\left[0, \frac{1}{2}, \frac{1}{2}\right]$	[6,11,17,24]

Table 8: Wyckoff site: `8h`, site symmetry: `3..`

No.	position	mapping
1	$\left[\frac{1}{3}, \frac{2}{3}, z\right]$	[1,2,3]
2	$\left[\frac{1}{3}, \frac{2}{3}, \frac{1}{2} - z\right]$	[4,5,6]
3	$\left[\frac{1}{3}, \frac{2}{3}, -z\right]$	[7,8,9]
4	$\left[\frac{1}{3}, \frac{2}{3}, z + \frac{1}{2}\right]$	[10,11,12]
5	$\left[\frac{2}{3}, \frac{1}{3}, z\right]$	[13,14,15]
6	$\left[\frac{2}{3}, \frac{1}{3}, \frac{1}{2} - z\right]$	[16,17,18]
7	$\left[\frac{2}{3}, \frac{1}{3}, -z\right]$	[19,20,21]
8	$\left[\frac{2}{3}, \frac{1}{3}, z + \frac{1}{2}\right]$	[22,23,24]

Table 9: Wyckoff site: `12i`, site symmetry: `2'..`

No.	position	mapping
1	$\left[\frac{1}{2}, 0, z\right]$	[1,14]
2	$\left[0, \frac{1}{2}, z\right]$	[2,15]
3	$\left[\frac{1}{2}, \frac{1}{2}, z\right]$	[3,13]
4	$\left[\frac{1}{2}, \frac{1}{2}, \frac{1}{2} - z\right]$	[4,18]
5	$\left[\frac{1}{2}, 0, \frac{1}{2} - z\right]$	[5,16]
6	$\left[0, \frac{1}{2}, \frac{1}{2} - z\right]$	[6,17]
7	$\left[\frac{1}{2}, \frac{1}{2}, -z\right]$	[7,21]

continued ...

Table 9

No.	position	mapping
8	$\left[\frac{1}{2}, 0, -z\right]$	[8,19]
9	$\left[0, \frac{1}{2}, -z\right]$	[9,20]
10	$\left[\frac{1}{2}, 0, z+\frac{1}{2}\right]$	[10,23]
11	$\left[0, \frac{1}{2}, z+\frac{1}{2}\right]$	[11,24]
12	$\left[\frac{1}{2}, \frac{1}{2}, z+\frac{1}{2}\right]$	[12,22]

Table 10: Wyckoff site: 12j, site symmetry: .2'.

No.	position	mapping
1	$\left[x, 0, \frac{1}{4}\right]$	[1,16]
2	$\left[0, x, \frac{1}{4}\right]$	[2,17]
3	$\left[-x, -x, \frac{1}{4}\right]$	[3,18]
4	$\left[x, x, \frac{1}{4}\right]$	[4,13]
5	$\left[-x, 0, \frac{1}{4}\right]$	[5,14]
6	$\left[0, -x, \frac{1}{4}\right]$	[6,15]
7	$\left[-x, -x, \frac{3}{4}\right]$	[7,22]
8	$\left[x, 0, \frac{3}{4}\right]$	[8,23]
9	$\left[0, x, \frac{3}{4}\right]$	[9,24]
10	$\left[-x, 0, \frac{3}{4}\right]$	[10,19]
11	$\left[0, -x, \frac{3}{4}\right]$	[11,20]
12	$\left[x, x, \frac{3}{4}\right]$	[12,21]

Table 11: Wyckoff site: 12k, site symmetry: ..2

No.	position	mapping
1	$\left[x, 2x, \frac{1}{4}\right]$	[1,5]
2	$\left[-2x, -x, \frac{1}{4}\right]$	[2,6]
3	$\left[x, -x, \frac{1}{4}\right]$	[3,4]
4	$\left[x, -x, \frac{3}{4}\right]$	[7,12]
5	$\left[x, 2x, \frac{3}{4}\right]$	[8,10]
6	$\left[-2x, -x, \frac{3}{4}\right]$	[9,11]
7	$\left[-x, x, \frac{1}{4}\right]$	[13,18]
8	$\left[-x, -2x, \frac{1}{4}\right]$	[14,16]
9	$\left[2x, x, \frac{1}{4}\right]$	[15,17]
10	$\left[-x, -2x, \frac{3}{4}\right]$	[19,23]
11	$\left[2x, x, \frac{3}{4}\right]$	[20,24]
12	$\left[-x, x, \frac{3}{4}\right]$	[21,22]

Table 12: Wyckoff site: 12l, site symmetry: m..

No.	position	mapping
1	$[x,\, y,\, 0]$	[1,8]
2	$[-y,\, x-y,\, 0]$	[2,9]
3	$[-x+y,\, -x,\, 0]$	[3,7]
4	$\left[x,\, x-y,\, \frac{1}{2}\right]$	[4,12]
5	$\left[-x+y,\, y,\, \frac{1}{2}\right]$	[5,10]
6	$\left[-y,\, -x,\, \frac{1}{2}\right]$	[6,11]
7	$[x-y,\, x,\, 0]$	[13,21]
8	$[-x,\, -y,\, 0]$	[14,19]
9	$[y,\, -x+y,\, 0]$	[15,20]
10	$\left[x-y,\, -y,\, \frac{1}{2}\right]$	[16,23]
11	$\left[y,\, x,\, \frac{1}{2}\right]$	[17,24]
12	$\left[-x,\, -x+y,\, \frac{1}{2}\right]$	[18,22]

Table 13: Wyckoff site: 24m, site symmetry: 1

No.	position	mapping
1	$[x,\, y,\, z]$	[1]
2	$[-y,\, x-y,\, z]$	[2]
3	$[-x+y,\, -x,\, z]$	[3]
4	$\left[x,\, x-y,\, \frac{1}{2}-z\right]$	[4]
5	$\left[-x+y,\, y,\, \frac{1}{2}-z\right]$	[5]
6	$\left[-y,\, -x,\, \frac{1}{2}-z\right]$	[6]
7	$[-x+y,\, -x,\, -z]$	[7]
8	$[x,\, y,\, -z]$	[8]
9	$[-y,\, x-y,\, -z]$	[9]
10	$\left[-x+y,\, y,\, z+\frac{1}{2}\right]$	[10]
11	$\left[-y,\, -x,\, z+\frac{1}{2}\right]$	[11]
12	$\left[x,\, x-y,\, z+\frac{1}{2}\right]$	[12]
13	$[x-y,\, x,\, z]$	[13]
14	$[-x,\, -y,\, z]$	[14]
15	$[y,\, -x+y,\, z]$	[15]
16	$\left[x-y,\, -y,\, \frac{1}{2}-z\right]$	[16]
17	$\left[y,\, x,\, \frac{1}{2}-z\right]$	[17]
18	$\left[-x,\, -x+y,\, \frac{1}{2}-z\right]$	[18]
19	$[-x,\, -y,\, -z]$	[19]
20	$[y,\, -x+y,\, -z]$	[20]
21	$[x-y,\, x,\, -z]$	[21]
22	$\left[-x,\, -x+y,\, z+\frac{1}{2}\right]$	[22]
23	$\left[x-y,\, -y,\, z+\frac{1}{2}\right]$	[23]
24	$\left[y,\, x,\, z+\frac{1}{2}\right]$	[24]