MSG No. 193.257 $P6'_3/mcm'$ [Type III, hexagonal]

Table 1: Wyckoff site: `2a`, site symmetry: `-62'm'`

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

Table 2: Wyckoff site: `2b`, site symmetry: `-3'.m'`

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

Table 3: Wyckoff site: `4c`, site symmetry: `-6..`

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

Table 4: Wyckoff site: `4d`, site symmetry: `3.2`

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

Table 5: Wyckoff site: `4e`, site symmetry: `3.m'`

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

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

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

Table 7: Wyckoff site: `6g`, site symmetry: `m2'm'`

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

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	$\left[\frac{1}{3}, \frac{2}{3}, -z\right]$	`[4,5,6]`
3	$\left[\frac{1}{3}, \frac{2}{3}, \frac{1}{2} - z\right]$	`[7,8,9]`
4	$\left[\frac{1}{3}, \frac{2}{3}, z + \frac{1}{2}\right]$	`[10,11,12]`
5	$\left[\frac{2}{3}, \frac{1}{3}, z + \frac{1}{2}\right]$	`[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	$\left[\frac{2}{3}, \frac{1}{3}, z\right]$	`[22,23,24]`

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

No.	position	mapping
1	$[x, 2x, 0]$	`[1,5]`
2	$[-2x, -x, 0]$	`[2,6]`
3	$[x, -x, 0]$	`[3,4]`
4	$\left[x, -x, \frac{1}{2}\right]$	`[7,12]`
5	$\left[x, 2x, \frac{1}{2}\right]$	`[8,10]`
6	$\left[-2x, -x, \frac{1}{2}\right]$	`[9,11]`
7	$\left[-x, x, \frac{1}{2}\right]$	`[13,18]`

continued ...

Table 9

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

Table 10: Wyckoff site: 12j, site symmetry: m..

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

Table 11: Wyckoff site: 12k, site symmetry: ..m'

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

Table 12: Wyckoff site: `241`, site symmetry: `1`

No.	position	mapping
1	$[x,\, y,\, z]$	`[1]`
2	$[-y,\, x-y,\, z]$	`[2]`
3	$[-x+y,\, -x,\, z]$	`[3]`
4	$[x,\, x-y,\, -z]$	`[4]`
5	$[-x+y,\, y,\, -z]$	`[5]`
6	$[-y,\, -x,\, -z]$	`[6]`
7	$\left[-x+y,\, -x,\, \frac{1}{2}-z\right]$	`[7]`
8	$\left[x,\, y,\, \frac{1}{2}-z\right]$	`[8]`
9	$\left[-y,\, x-y,\, \frac{1}{2}-z\right]$	`[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	$\left[x-y,\, x,\, z+\frac{1}{2}\right]$	`[13]`
14	$\left[-x,\, -y,\, z+\frac{1}{2}\right]$	`[14]`
15	$\left[y,\, -x+y,\, z+\frac{1}{2}\right]$	`[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	$[-x,\, -x+y,\, z]$	`[22]`
23	$[x-y,\, -y,\, z]$	`[23]`
24	$[y,\, x,\, z]$	`[24]`