MSG No. 180.169 $P6'_22'2$ [Type III, hexagonal]

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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