MSG No. 65.482 $Cmmm1'$ [Type II, orthorhombic]

Table 1: Wyckoff site: `2a`, site symmetry: `mmm1'`

No.	position	mapping
1	$[0, 0, 0]$	`[1,2,3,4,5,6,7,8,17,18,19,20,21,22,23,24]`
2	$\left[\frac{1}{2}, \frac{1}{2}, 0\right]$	`[9,10,11,12,13,14,15,16,25,26,27,28,29,30,31,32]`

Table 2: Wyckoff site: `2b`, site symmetry: `mmm1'`

No.	position	mapping
1	$\left[\frac{1}{2}, 0, 0\right]$	`[1,2,3,4,5,6,7,8,17,18,19,20,21,22,23,24]`
2	$\left[0, \frac{1}{2}, 0\right]$	`[9,10,11,12,13,14,15,16,25,26,27,28,29,30,31,32]`

Table 3: Wyckoff site: `2c`, site symmetry: `mmm1'`

No.	position	mapping
1	$\left[\frac{1}{2}, 0, \frac{1}{2}\right]$	`[1,2,3,4,5,6,7,8,17,18,19,20,21,22,23,24]`
2	$\left[0, \frac{1}{2}, \frac{1}{2}\right]$	`[9,10,11,12,13,14,15,16,25,26,27,28,29,30,31,32]`

Table 4: Wyckoff site: `2d`, site symmetry: `mmm1'`

No.	position	mapping
1	$\left[0, 0, \frac{1}{2}\right]$	`[1,2,3,4,5,6,7,8,17,18,19,20,21,22,23,24]`
2	$\left[\frac{1}{2}, \frac{1}{2}, \frac{1}{2}\right]$	`[9,10,11,12,13,14,15,16,25,26,27,28,29,30,31,32]`

Table 5: Wyckoff site: `4e`, site symmetry: `..2/m1'`

No.	position	mapping
1	$\left[\frac{1}{4}, \frac{1}{4}, 0\right]$	`[1,8,12,13,17,24,28,29]`
2	$\left[\frac{1}{4}, \frac{3}{4}, 0\right]$	`[2,7,11,14,18,23,27,30]`
3	$\left[\frac{3}{4}, \frac{1}{4}, 0\right]$	`[3,6,10,15,19,22,26,31]`
4	$\left[\frac{3}{4}, \frac{3}{4}, 0\right]$	`[4,5,9,16,20,21,25,32]`

Table 6: Wyckoff site: `4f`, site symmetry: `..2/m1'`

No.	position	mapping
1	$\left[\frac{1}{4}, \frac{1}{4}, \frac{1}{2}\right]$	`[1,8,12,13,17,24,28,29]`
2	$\left[\frac{1}{4}, \frac{3}{4}, \frac{1}{2}\right]$	`[2,7,11,14,18,23,27,30]`
3	$\left[\frac{3}{4}, \frac{1}{4}, \frac{1}{2}\right]$	`[3,6,10,15,19,22,26,31]`
4	$\left[\frac{3}{4}, \frac{3}{4}, \frac{1}{2}\right]$	`[4,5,9,16,20,21,25,32]`

Table 7: Wyckoff site: `4g`, site symmetry: `2mm1'`

No.	position	mapping
1	$[x, 0, 0]$	`[1,2,7,8,17,18,23,24]`
2	$[-x, 0, 0]$	`[3,4,5,6,19,20,21,22]`
3	$\left[x+\frac{1}{2}, \frac{1}{2}, 0\right]$	`[9,10,15,16,25,26,31,32]`
4	$\left[\frac{1}{2}-x, \frac{1}{2}, 0\right]$	`[11,12,13,14,27,28,29,30]`

Table 8: Wyckoff site: `4h`, site symmetry: `2mm1'`

No.	position	mapping
1	$\left[x, 0, \frac{1}{2}\right]$	`[1,2,7,8,17,18,23,24]`
2	$\left[-x, 0, \frac{1}{2}\right]$	`[3,4,5,6,19,20,21,22]`
3	$\left[x+\frac{1}{2}, \frac{1}{2}, \frac{1}{2}\right]$	`[9,10,15,16,25,26,31,32]`
4	$\left[\frac{1}{2}-x, \frac{1}{2}, \frac{1}{2}\right]$	`[11,12,13,14,27,28,29,30]`

Table 9: Wyckoff site: `4i`, site symmetry: `m2m1'`

No.	position	mapping
1	$[0, y, 0]$	`[1,3,6,8,17,19,22,24]`
2	$[0, -y, 0]$	`[2,4,5,7,18,20,21,23]`
3	$\left[\frac{1}{2}, y+\frac{1}{2}, 0\right]$	`[9,11,14,16,25,27,30,32]`
4	$\left[\frac{1}{2}, \frac{1}{2}-y, 0\right]$	`[10,12,13,15,26,28,29,31]`

Table 10: Wyckoff site: `4j`, site symmetry: `m2m1'`

No.	position	mapping
1	$\left[0, y, \frac{1}{2}\right]$	`[1,3,6,8,17,19,22,24]`
2	$\left[0, -y, \frac{1}{2}\right]$	`[2,4,5,7,18,20,21,23]`
3	$\left[\frac{1}{2}, y+\frac{1}{2}, \frac{1}{2}\right]$	`[9,11,14,16,25,27,30,32]`
4	$\left[\frac{1}{2}, \frac{1}{2}-y, \frac{1}{2}\right]$	`[10,12,13,15,26,28,29,31]`

Table 11: Wyckoff site: 4k, site symmetry: mm21'

No.	position	mapping
1	$[0,\ 0,\ z]$	[1,4,6,7,17,20,22,23]
2	$[0,\ 0,\ -z]$	[2,3,5,8,18,19,21,24]
3	$\left[\frac{1}{2},\ \frac{1}{2},\ z\right]$	[9,12,14,15,25,28,30,31]
4	$\left[\frac{1}{2},\ \frac{1}{2},\ -z\right]$	[10,11,13,16,26,27,29,32]

Table 12: Wyckoff site: 4l, site symmetry: mm21'

No.	position	mapping
1	$\left[0,\ \frac{1}{2},\ z\right]$	[1,4,6,7,17,20,22,23]
2	$\left[0,\ \frac{1}{2},\ -z\right]$	[2,3,5,8,18,19,21,24]
3	$\left[\frac{1}{2},\ 0,\ z\right]$	[9,12,14,15,25,28,30,31]
4	$\left[\frac{1}{2},\ 0,\ -z\right]$	[10,11,13,16,26,27,29,32]

Table 13: Wyckoff site: 8m, site symmetry: ..21'

No.	position	mapping
1	$\left[\frac{1}{4},\ \frac{1}{4},\ z\right]$	[1,12,17,28]
2	$\left[\frac{1}{4},\ \frac{3}{4},\ -z\right]$	[2,11,18,27]
3	$\left[\frac{3}{4},\ \frac{1}{4},\ -z\right]$	[3,10,19,26]
4	$\left[\frac{3}{4},\ \frac{3}{4},\ z\right]$	[4,9,20,25]
5	$\left[\frac{3}{4},\ \frac{3}{4},\ -z\right]$	[5,16,21,32]
6	$\left[\frac{3}{4},\ \frac{1}{4},\ z\right]$	[6,15,22,31]
7	$\left[\frac{1}{4},\ \frac{3}{4},\ z\right]$	[7,14,23,30]
8	$\left[\frac{1}{4},\ \frac{1}{4},\ -z\right]$	[8,13,24,29]

Table 14: Wyckoff site: 8n, site symmetry: m..1'

No.	position	mapping
1	$[0,\ y,\ z]$	[1,6,17,22]
2	$[0,\ -y,\ -z]$	[2,5,18,21]
3	$[0,\ y,\ -z]$	[3,8,19,24]
4	$[0,\ -y,\ z]$	[4,7,20,23]
5	$\left[\frac{1}{2},\ y+\frac{1}{2},\ z\right]$	[9,14,25,30]
6	$\left[\frac{1}{2},\ \frac{1}{2}-y,\ -z\right]$	[10,13,26,29]
7	$\left[\frac{1}{2},\ y+\frac{1}{2},\ -z\right]$	[11,16,27,32]
8	$\left[\frac{1}{2},\ \frac{1}{2}-y,\ z\right]$	[12,15,28,31]

Table 15: Wyckoff site: 8o, site symmetry: .m.1'

No.	position	mapping
1	$[x,\ 0,\ z]$	[1,7,17,23]
2	$[x,\ 0,\ -z]$	[2,8,18,24]
3	$[-x,\ 0,\ -z]$	[3,5,19,21]
4	$[-x,\ 0,\ z]$	[4,6,20,22]
5	$\left[x+\frac{1}{2},\ \frac{1}{2},\ z\right]$	[9,15,25,31]
6	$\left[x+\frac{1}{2},\ \frac{1}{2},\ -z\right]$	[10,16,26,32]
7	$\left[\frac{1}{2}-x,\ \frac{1}{2},\ -z\right]$	[11,13,27,29]
8	$\left[\frac{1}{2}-x,\ \frac{1}{2},\ z\right]$	[12,14,28,30]

Table 16: Wyckoff site: 8p, site symmetry: ..m1'

No.	position	mapping
1	$[x,\ y,\ 0]$	[1,8,17,24]
2	$[x,\ -y,\ 0]$	[2,7,18,23]
3	$[-x,\ y,\ 0]$	[3,6,19,22]
4	$[-x,\ -y,\ 0]$	[4,5,20,21]
5	$\left[x+\frac{1}{2},\ y+\frac{1}{2},\ 0\right]$	[9,16,25,32]
6	$\left[x+\frac{1}{2},\ \frac{1}{2}-y,\ 0\right]$	[10,15,26,31]
7	$\left[\frac{1}{2}-x,\ y+\frac{1}{2},\ 0\right]$	[11,14,27,30]
8	$\left[\frac{1}{2}-x,\ \frac{1}{2}-y,\ 0\right]$	[12,13,28,29]

Table 17: Wyckoff site: 8q, site symmetry: ..m1'

No.	position	mapping
1	$\left[x,\ y,\ \frac{1}{2}\right]$	[1,8,17,24]
2	$\left[x,\ -y,\ \frac{1}{2}\right]$	[2,7,18,23]
3	$\left[-x,\ y,\ \frac{1}{2}\right]$	[3,6,19,22]
4	$\left[-x,\ -y,\ \frac{1}{2}\right]$	[4,5,20,21]
5	$\left[x+\frac{1}{2},\ y+\frac{1}{2},\ \frac{1}{2}\right]$	[9,16,25,32]
6	$\left[x+\frac{1}{2},\ \frac{1}{2}-y,\ \frac{1}{2}\right]$	[10,15,26,31]
7	$\left[\frac{1}{2}-x,\ y+\frac{1}{2},\ \frac{1}{2}\right]$	[11,14,27,30]
8	$\left[\frac{1}{2}-x,\ \frac{1}{2}-y,\ \frac{1}{2}\right]$	[12,13,28,29]

Table 18: Wyckoff site: 16r, site symmetry: 11'

No.	position	mapping
1	$[x,\ y,\ z]$	[1,17]
2	$[x,\ -y,\ -z]$	[2,18]
3	$[-x,\ y,\ -z]$	[3,19]

continued ...

Table 18

No.	position	mapping
4	$[-x, -y, z]$	[4,20]
5	$[-x, -y, -z]$	[5,21]
6	$[-x, y, z]$	[6,22]
7	$[x, -y, z]$	[7,23]
8	$[x, y, -z]$	[8,24]
9	$\left[x+\frac{1}{2}, y+\frac{1}{2}, z\right]$	[9,25]
10	$\left[x+\frac{1}{2}, \frac{1}{2}-y, -z\right]$	[10,26]
11	$\left[\frac{1}{2}-x, y+\frac{1}{2}, -z\right]$	[11,27]
12	$\left[\frac{1}{2}-x, \frac{1}{2}-y, z\right]$	[12,28]
13	$\left[\frac{1}{2}-x, \frac{1}{2}-y, -z\right]$	[13,29]
14	$\left[\frac{1}{2}-x, y+\frac{1}{2}, z\right]$	[14,30]
15	$\left[x+\frac{1}{2}, \frac{1}{2}-y, z\right]$	[15,31]
16	$\left[x+\frac{1}{2}, y+\frac{1}{2}, -z\right]$	[16,32]