MSG No. 204.32 $Im'\bar{3}'$ [Type III, cubic]

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

No.	position	mapping
1	$[0,\ 0,\ 0]$	`[1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24]`
2	$\left[\frac{1}{2},\ \frac{1}{2},\ \frac{1}{2}\right]$	`[25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48]`

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

No.	position	mapping
1	$\left[0,\ \frac{1}{2},\ \frac{1}{2}\right]$	`[1,2,3,4,13,14,15,16]`
2	$\left[\frac{1}{2},\ 0,\ \frac{1}{2}\right]$	`[5,8,10,12,17,20,22,24]`
3	$\left[\frac{1}{2},\ \frac{1}{2},\ 0\right]$	`[6,7,9,11,18,19,21,23]`
4	$\left[\frac{1}{2},\ 0,\ 0\right]$	`[25,26,27,28,37,38,39,40]`
5	$\left[0,\ \frac{1}{2},\ 0\right]$	`[29,32,34,36,41,44,46,48]`
6	$\left[0,\ 0,\ \frac{1}{2}\right]$	`[30,31,33,35,42,43,45,47]`

Table 3: Wyckoff site: `8c`, site symmetry: `.-3'.`

No.	position	mapping
1	$\left[\frac{1}{4},\ \frac{1}{4},\ \frac{1}{4}\right]$	`[1,5,6,37,41,42]`
2	$\left[\frac{1}{4},\ \frac{3}{4},\ \frac{3}{4}\right]$	`[2,10,11,38,46,47]`
3	$\left[\frac{3}{4},\ \frac{1}{4},\ \frac{3}{4}\right]$	`[3,7,12,39,43,48]`
4	$\left[\frac{3}{4},\ \frac{3}{4},\ \frac{1}{4}\right]$	`[4,8,9,40,44,45]`
5	$\left[\frac{3}{4},\ \frac{3}{4},\ \frac{3}{4}\right]$	`[13,17,18,25,29,30]`
6	$\left[\frac{3}{4},\ \frac{1}{4},\ \frac{1}{4}\right]$	`[14,22,23,26,34,35]`
7	$\left[\frac{1}{4},\ \frac{3}{4},\ \frac{1}{4}\right]$	`[15,19,24,27,31,36]`
8	$\left[\frac{1}{4},\ \frac{1}{4},\ \frac{3}{4}\right]$	`[16,20,21,28,32,33]`

Table 4: Wyckoff site: `12d`, site symmetry: `2m'm'..`

No.	position	mapping
1	$[x,\ 0,\ 0]$	`[1,2,15,16]`
2	$[-x,\ 0,\ 0]$	`[3,4,13,14]`
3	$[0,\ x,\ 0]$	`[5,12,20,22]`
4	$[0,\ 0,\ x]$	`[6,9,19,23]`
5	$[0,\ 0,\ -x]$	`[7,11,18,21]`
6	$[0,\ -x,\ 0]$	`[8,10,17,24]`
7	$\left[x+\frac{1}{2},\ \frac{1}{2},\ \frac{1}{2}\right]$	`[25,26,39,40]`
8	$\left[\frac{1}{2}-x,\ \frac{1}{2},\ \frac{1}{2}\right]$	`[27,28,37,38]`
9	$\left[\frac{1}{2},\ x+\frac{1}{2},\ \frac{1}{2}\right]$	`[29,36,44,46]`

continued ...

Table 4

No.	position	mapping
10	$\left[\frac{1}{2}, \frac{1}{2}, x+\frac{1}{2}\right]$	[30,33,43,47]
11	$\left[\frac{1}{2}, \frac{1}{2}, \frac{1}{2}-x\right]$	[31,35,42,45]
12	$\left[\frac{1}{2}, \frac{1}{2}-x, \frac{1}{2}\right]$	[32,34,41,48]

Table 5: Wyckoff site: 12e, site symmetry: 2m'm'..

No.	position	mapping
1	$\left[x, 0, \frac{1}{2}\right]$	[1,2,15,16]
2	$\left[-x, 0, \frac{1}{2}\right]$	[3,4,13,14]
3	$\left[\frac{1}{2}, x, 0\right]$	[5,12,20,22]
4	$\left[0, \frac{1}{2}, x\right]$	[6,9,19,23]
5	$\left[0, \frac{1}{2}, -x\right]$	[7,11,18,21]
6	$\left[\frac{1}{2}, -x, 0\right]$	[8,10,17,24]
7	$\left[x+\frac{1}{2}, \frac{1}{2}, 0\right]$	[25,26,39,40]
8	$\left[\frac{1}{2}-x, \frac{1}{2}, 0\right]$	[27,28,37,38]
9	$\left[0, x+\frac{1}{2}, \frac{1}{2}\right]$	[29,36,44,46]
10	$\left[\frac{1}{2}, 0, x+\frac{1}{2}\right]$	[30,33,43,47]
11	$\left[\frac{1}{2}, 0, \frac{1}{2}-x\right]$	[31,35,42,45]
12	$\left[0, \frac{1}{2}-x, \frac{1}{2}\right]$	[32,34,41,48]

Table 6: Wyckoff site: 16f, site symmetry: .3.

No.	position	mapping
1	$[x, x, x]$	[1,5,6]
2	$[x, -x, -x]$	[2,10,11]
3	$[-x, x, -x]$	[3,7,12]
4	$[-x, -x, x]$	[4,8,9]
5	$[-x, -x, -x]$	[13,17,18]
6	$[-x, x, x]$	[14,22,23]
7	$[x, -x, x]$	[15,19,24]
8	$[x, x, -x]$	[16,20,21]
9	$\left[x+\frac{1}{2}, x+\frac{1}{2}, x+\frac{1}{2}\right]$	[25,29,30]
10	$\left[x+\frac{1}{2}, \frac{1}{2}-x, \frac{1}{2}-x\right]$	[26,34,35]
11	$\left[\frac{1}{2}-x, x+\frac{1}{2}, \frac{1}{2}-x\right]$	[27,31,36]
12	$\left[\frac{1}{2}-x, \frac{1}{2}-x, x+\frac{1}{2}\right]$	[28,32,33]
13	$\left[\frac{1}{2}-x, \frac{1}{2}-x, \frac{1}{2}-x\right]$	[37,41,42]
14	$\left[\frac{1}{2}-x, x+\frac{1}{2}, x+\frac{1}{2}\right]$	[38,46,47]
15	$\left[x+\frac{1}{2}, \frac{1}{2}-x, x+\frac{1}{2}\right]$	[39,43,48]
16	$\left[x+\frac{1}{2}, x+\frac{1}{2}, \frac{1}{2}-x\right]$	[40,44,45]

Table 7: Wyckoff site: 24g, site symmetry: m’..

No.	position	mapping
1	$[0,\ y,\ z]$	[1,14]
2	$[0,\ -y,\ -z]$	[2,13]
3	$[0,\ y,\ -z]$	[3,16]
4	$[0,\ -y,\ z]$	[4,15]
5	$[z,\ 0,\ y]$	[5,24]
6	$[y,\ z,\ 0]$	[6,21]
7	$[-y,\ z,\ 0]$	[7,23]
8	$[-z,\ 0,\ y]$	[8,22]
9	$[-y,\ -z,\ 0]$	[9,18]
10	$[z,\ 0,\ -y]$	[10,20]
11	$[y,\ -z,\ 0]$	[11,19]
12	$[-z,\ 0,\ -y]$	[12,17]
13	$\left[\frac{1}{2},\ y+\frac{1}{2},\ z+\frac{1}{2}\right]$	[25,38]
14	$\left[\frac{1}{2},\ \frac{1}{2}-y,\ \frac{1}{2}-z\right]$	[26,37]
15	$\left[\frac{1}{2},\ y+\frac{1}{2},\ \frac{1}{2}-z\right]$	[27,40]
16	$\left[\frac{1}{2},\ \frac{1}{2}-y,\ z+\frac{1}{2}\right]$	[28,39]
17	$\left[z+\frac{1}{2},\ \frac{1}{2},\ y+\frac{1}{2}\right]$	[29,48]
18	$\left[y+\frac{1}{2},\ z+\frac{1}{2},\ \frac{1}{2}\right]$	[30,45]
19	$\left[\frac{1}{2}-y,\ z+\frac{1}{2},\ \frac{1}{2}\right]$	[31,47]
20	$\left[\frac{1}{2}-z,\ \frac{1}{2},\ y+\frac{1}{2}\right]$	[32,46]
21	$\left[\frac{1}{2}-y,\ \frac{1}{2}-z,\ \frac{1}{2}\right]$	[33,42]
22	$\left[z+\frac{1}{2},\ \frac{1}{2},\ \frac{1}{2}-y\right]$	[34,44]
23	$\left[y+\frac{1}{2},\ \frac{1}{2}-z,\ \frac{1}{2}\right]$	[35,43]
24	$\left[\frac{1}{2}-z,\ \frac{1}{2},\ \frac{1}{2}-y\right]$	[36,41]

Table 8: Wyckoff site: 48h, site symmetry: 1

No.	position	mapping
1	$[x,\ y,\ z]$	[1]
2	$[x,\ -y,\ -z]$	[2]
3	$[-x,\ y,\ -z]$	[3]
4	$[-x,\ -y,\ z]$	[4]
5	$[z,\ x,\ y]$	[5]
6	$[y,\ z,\ x]$	[6]
7	$[-y,\ z,\ -x]$	[7]
8	$[-z,\ -x,\ y]$	[8]
9	$[-y,\ -z,\ x]$	[9]
10	$[z,\ -x,\ -y]$	[10]
11	$[y,\ -z,\ -x]$	[11]
12	$[-z,\ x,\ -y]$	[12]
13	$[-x,\ -y,\ -z]$	[13]
14	$[-x,\ y,\ z]$	[14]
15	$[x,\ -y,\ z]$	[15]

continued ...

Table 8

No.	position	mapping
16	$[x,\, y,\, -z]$	[16]
17	$[-z,\, -x,\, -y]$	[17]
18	$[-y,\, -z,\, -x]$	[18]
19	$[y,\, -z,\, x]$	[19]
20	$[z,\, x,\, -y]$	[20]
21	$[y,\, z,\, -x]$	[21]
22	$[-z,\, x,\, y]$	[22]
23	$[-y,\, z,\, x]$	[23]
24	$[z,\, -x,\, y]$	[24]
25	$\left[x+\frac{1}{2},\, y+\frac{1}{2},\, z+\frac{1}{2}\right]$	[25]
26	$\left[x+\frac{1}{2},\, \frac{1}{2}-y,\, \frac{1}{2}-z\right]$	[26]
27	$\left[\frac{1}{2}-x,\, y+\frac{1}{2},\, \frac{1}{2}-z\right]$	[27]
28	$\left[\frac{1}{2}-x,\, \frac{1}{2}-y,\, z+\frac{1}{2}\right]$	[28]
29	$\left[z+\frac{1}{2},\, x+\frac{1}{2},\, y+\frac{1}{2}\right]$	[29]
30	$\left[y+\frac{1}{2},\, z+\frac{1}{2},\, x+\frac{1}{2}\right]$	[30]
31	$\left[\frac{1}{2}-y,\, z+\frac{1}{2},\, \frac{1}{2}-x\right]$	[31]
32	$\left[\frac{1}{2}-z,\, \frac{1}{2}-x,\, y+\frac{1}{2}\right]$	[32]
33	$\left[\frac{1}{2}-y,\, \frac{1}{2}-z,\, x+\frac{1}{2}\right]$	[33]
34	$\left[z+\frac{1}{2},\, \frac{1}{2}-x,\, \frac{1}{2}-y\right]$	[34]
35	$\left[y+\frac{1}{2},\, \frac{1}{2}-z,\, \frac{1}{2}-x\right]$	[35]
36	$\left[\frac{1}{2}-z,\, x+\frac{1}{2},\, \frac{1}{2}-y\right]$	[36]
37	$\left[\frac{1}{2}-x,\, \frac{1}{2}-y,\, \frac{1}{2}-z\right]$	[37]
38	$\left[\frac{1}{2}-x,\, y+\frac{1}{2},\, z+\frac{1}{2}\right]$	[38]
39	$\left[x+\frac{1}{2},\, \frac{1}{2}-y,\, z+\frac{1}{2}\right]$	[39]
40	$\left[x+\frac{1}{2},\, y+\frac{1}{2},\, \frac{1}{2}-z\right]$	[40]
41	$\left[\frac{1}{2}-z,\, \frac{1}{2}-x,\, \frac{1}{2}-y\right]$	[41]
42	$\left[\frac{1}{2}-y,\, \frac{1}{2}-z,\, \frac{1}{2}-x\right]$	[42]
43	$\left[y+\frac{1}{2},\, \frac{1}{2}-z,\, x+\frac{1}{2}\right]$	[43]
44	$\left[z+\frac{1}{2},\, x+\frac{1}{2},\, \frac{1}{2}-y\right]$	[44]
45	$\left[y+\frac{1}{2},\, z+\frac{1}{2},\, \frac{1}{2}-x\right]$	[45]
46	$\left[\frac{1}{2}-z,\, x+\frac{1}{2},\, y+\frac{1}{2}\right]$	[46]
47	$\left[\frac{1}{2}-y,\, z+\frac{1}{2},\, x+\frac{1}{2}\right]$	[47]
48	$\left[z+\frac{1}{2},\, \frac{1}{2}-x,\, y+\frac{1}{2}\right]$	[48]