MSG No. 148.20 $R_I\bar{3}$ [Type IV, trigonal]

Table 1: Wyckoff site: `6a`, site symmetry: `-3..`

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

Table 2: Wyckoff site: `6b`, site symmetry: `-3'..`

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

Table 3: Wyckoff site: `12c`, site symmetry: `3..`

No.	position	mapping
1	$[0,\ 0,\ z]$	`[1,2,3]`
2	$[0,\ 0,\ -z]$	`[4,5,6]`
3	$\left[\frac{2}{3},\ \frac{1}{3},\ z+\frac{1}{3}\right]$	`[7,8,9]`
4	$\left[\frac{2}{3},\ \frac{1}{3},\ \frac{1}{3}-z\right]$	`[10,11,12]`
5	$\left[\frac{1}{3},\ \frac{2}{3},\ z+\frac{2}{3}\right]$	`[13,14,15]`
6	$\left[\frac{1}{3},\ \frac{2}{3},\ \frac{2}{3}-z\right]$	`[16,17,18]`
7	$\left[0,\ 0,\ z+\frac{1}{2}\right]$	`[19,20,21]`
8	$\left[0,\ 0,\ \frac{1}{2}-z\right]$	`[22,23,24]`
9	$\left[\frac{2}{3},\ \frac{1}{3},\ z+\frac{5}{6}\right]$	`[25,26,27]`
10	$\left[\frac{2}{3},\ \frac{1}{3},\ \frac{5}{6}-z\right]$	`[28,29,30]`
11	$\left[\frac{1}{3},\ \frac{2}{3},\ z+\frac{1}{6}\right]$	`[31,32,33]`
12	$\left[\frac{1}{3},\ \frac{2}{3},\ \frac{1}{6}-z\right]$	`[34,35,36]`

Table 4: Wyckoff site: `18d`, site symmetry: `-1'`

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

Table 5: Wyckoff site: `18e`, site symmetry: `-1`

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

Table 6: Wyckoff site: `36f`, site symmetry: `1`

No.	position	mapping
1	$[x,\, y,\, z]$	`[1]`
2	$[-y,\, x-y,\, z]$	`[2]`
3	$[-x+y,\, -x,\, z]$	`[3]`
4	$[-x,\, -y,\, -z]$	`[4]`
5	$[y,\, -x+y,\, -z]$	`[5]`
6	$[x-y,\, x,\, -z]$	`[6]`
7	$\left[x+\frac{2}{3},\, y+\frac{1}{3},\, z+\frac{1}{3}\right]$	`[7]`
8	$\left[\frac{2}{3}-y,\, x-y+\frac{1}{3},\, z+\frac{1}{3}\right]$	`[8]`
9	$\left[-x+y+\frac{2}{3},\, \frac{1}{3}-x,\, z+\frac{1}{3}\right]$	`[9]`
10	$\left[\frac{2}{3}-x,\, \frac{1}{3}-y,\, \frac{1}{3}-z\right]$	`[10]`
11	$\left[y+\frac{2}{3},\, -x+y+\frac{1}{3},\, \frac{1}{3}-z\right]$	`[11]`
12	$\left[x-y+\frac{2}{3},\, x+\frac{1}{3},\, \frac{1}{3}-z\right]$	`[12]`
13	$\left[x+\frac{1}{3},\, y+\frac{2}{3},\, z+\frac{2}{3}\right]$	`[13]`
14	$\left[\frac{1}{3}-y,\, x-y+\frac{2}{3},\, z+\frac{2}{3}\right]$	`[14]`
15	$\left[-x+y+\frac{1}{3},\, \frac{2}{3}-x,\, z+\frac{2}{3}\right]$	`[15]`
16	$\left[\frac{1}{3}-x,\, \frac{2}{3}-y,\, \frac{2}{3}-z\right]$	`[16]`
17	$\left[y+\frac{1}{3},\, -x+y+\frac{2}{3},\, \frac{2}{3}-z\right]$	`[17]`
18	$\left[x-y+\frac{1}{3},\, x+\frac{2}{3},\, \frac{2}{3}-z\right]$	`[18]`
19	$\left[x,\, y,\, z+\frac{1}{2}\right]$	`[19]`
20	$\left[-y,\, x-y,\, z+\frac{1}{2}\right]$	`[20]`
21	$\left[-x+y,\, -x,\, z+\frac{1}{2}\right]$	`[21]`
22	$\left[-x,\, -y,\, \frac{1}{2}-z\right]$	`[22]`
23	$\left[y,\, -x+y,\, \frac{1}{2}-z\right]$	`[23]`
24	$\left[x-y,\, x,\, \frac{1}{2}-z\right]$	`[24]`
25	$\left[x+\frac{2}{3},\, y+\frac{1}{3},\, z+\frac{5}{6}\right]$	`[25]`
26	$\left[\frac{2}{3}-y,\, x-y+\frac{1}{3},\, z+\frac{5}{6}\right]$	`[26]`
27	$\left[-x+y+\frac{2}{3},\, \frac{1}{3}-x,\, z+\frac{5}{6}\right]$	`[27]`
28	$\left[\frac{2}{3}-x,\, \frac{1}{3}-y,\, \frac{5}{6}-z\right]$	`[28]`
29	$\left[y+\frac{2}{3},\, -x+y+\frac{1}{3},\, \frac{5}{6}-z\right]$	`[29]`
30	$\left[x-y+\frac{2}{3},\, x+\frac{1}{3},\, \frac{5}{6}-z\right]$	`[30]`
31	$\left[x+\frac{1}{3},\, y+\frac{2}{3},\, z+\frac{1}{6}\right]$	`[31]`
32	$\left[\frac{1}{3}-y,\, x-y+\frac{2}{3},\, z+\frac{1}{6}\right]$	`[32]`
33	$\left[-x+y+\frac{1}{3},\, \frac{2}{3}-x,\, z+\frac{1}{6}\right]$	`[33]`
34	$\left[\frac{1}{3}-x,\, \frac{2}{3}-y,\, \frac{1}{6}-z\right]$	`[34]`
35	$\left[y+\frac{1}{3},\, -x+y+\frac{2}{3},\, \frac{1}{6}-z\right]$	`[35]`
36	$\left[x-y+\frac{1}{3},\, x+\frac{2}{3},\, \frac{1}{6}-z\right]$	`[36]`