

MSG No. 207.42 $P4'32'$ [Type III, cubic]

Table 1: Wyckoff site: 1a, site symmetry: $4'32'$

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

Table 2: Wyckoff site: 1b, site symmetry: $4'32'$

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

Table 3: Wyckoff site: 3c, site symmetry: $4'2.2'$

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

Table 4: Wyckoff site: 3d, site symmetry: $4'2.2'$

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

Table 5: Wyckoff site: 6e, site symmetry: $4'..$

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

Table 6: Wyckoff site: 6f, site symmetry: $4'$. .

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

Table 7: Wyckoff site: 8g, 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, 18, 23]
6	$[x, x, -x]$	[14, 15, 19]
7	$[-x, x, x]$	[16, 17, 21]
8	$[-x, -x, -x]$	[20, 22, 24]

Table 8: Wyckoff site: 12h, site symmetry: 2 . .

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

Table 9: Wyckoff site: 12i, site symmetry: $\dots 2'$

No.	position	mapping
1	$[0, y, y]$	$[1, 21]$
2	$[0, -y, -y]$	$[2, 22]$
3	$[0, y, -y]$	$[3, 14]$
4	$[0, -y, y]$	$[4, 13]$
5	$[y, 0, y]$	$[5, 18]$
6	$[y, y, 0]$	$[6, 15]$
7	$[-y, y, 0]$	$[7, 16]$
8	$[-y, 0, y]$	$[8, 17]$
9	$[-y, -y, 0]$	$[9, 24]$
10	$[y, 0, -y]$	$[10, 19]$
11	$[y, -y, 0]$	$[11, 23]$
12	$[-y, 0, -y]$	$[12, 20]$

Table 10: Wyckoff site: 12j, site symmetry: $\dots 2'$

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

Table 11: Wyckoff site: 24k, 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	$[-y, -z, x]$	$[9]$

continued ...

Table 11

No.	position	mapping
10	$[z, -x, -y]$	[10]
11	$[y, -z, -x]$	[11]
12	$[-z, x, -y]$	[12]
13	$[x, -z, y]$	[13]
14	$[x, z, -y]$	[14]
15	$[z, y, -x]$	[15]
16	$[-z, y, x]$	[16]
17	$[-y, x, z]$	[17]
18	$[y, -x, z]$	[18]
19	$[y, x, -z]$	[19]
20	$[-y, -x, -z]$	[20]
21	$[-x, z, y]$	[21]
22	$[-x, -z, -y]$	[22]
23	$[z, -y, x]$	[23]
24	$[-z, -y, -x]$	[24]