

MSG No. 91.108 P_c4_122 [Type IV, tetragonal]

Table 1: Wyckoff site: 4a, site symmetry: 2'2'2.

No.	position	mapping
1	[0, 0, 0]	[1, 5, 12, 14]
2	[0, 0, $\frac{1}{4}$]	[2, 8, 11, 15]
3	[0, 0, $\frac{3}{4}$]	[3, 7, 10, 16]
4	[0, 0, $\frac{1}{2}$]	[4, 6, 9, 13]

Table 2: Wyckoff site: 4b, site symmetry: 2'2'2.

No.	position	mapping
1	[$\frac{1}{2}$, $\frac{1}{2}$, 0]	[1, 5, 12, 14]
2	[$\frac{1}{2}$, $\frac{1}{2}$, $\frac{1}{4}$]	[2, 8, 11, 15]
3	[$\frac{1}{2}$, $\frac{1}{2}$, $\frac{3}{4}$]	[3, 7, 10, 16]
4	[$\frac{1}{2}$, $\frac{1}{2}$, $\frac{1}{2}$]	[4, 6, 9, 13]

Table 3: Wyckoff site: 4c, site symmetry: 2'2'2.

No.	position	mapping
1	[$\frac{1}{2}$, 0, 0]	[1, 5, 12, 14]
2	[0, $\frac{1}{2}$, $\frac{1}{4}$]	[2, 8, 11, 15]
3	[0, $\frac{1}{2}$, $\frac{3}{4}$]	[3, 7, 10, 16]
4	[$\frac{1}{2}$, 0, $\frac{1}{2}$]	[4, 6, 9, 13]

Table 4: Wyckoff site: 4d, site symmetry: 2'22'.

No.	position	mapping
1	[$\frac{1}{2}$, 0, $\frac{1}{4}$]	[1, 4, 13, 14]
2	[0, $\frac{1}{2}$, $\frac{1}{2}$]	[2, 7, 11, 16]
3	[0, $\frac{1}{2}$, 0]	[3, 8, 10, 15]
4	[$\frac{1}{2}$, 0, $\frac{3}{4}$]	[5, 6, 9, 12]

Table 5: Wyckoff site: 4e, site symmetry: 2.22

No.	position	mapping
1	[0, 0, $\frac{1}{8}$]	[1, 8, 14, 15]
2	[0, 0, $\frac{3}{8}$]	[2, 4, 11, 13]

continued ...

Table 5

No.	position	mapping
3	$[0, 0, \frac{7}{8}]$	[3,5,10,12]
4	$[0, 0, \frac{5}{8}]$	[6,7,9,16]

Table 6: Wyckoff site: 4f, site symmetry: 2.22

No.	position	mapping
1	$[\frac{1}{2}, \frac{1}{2}, \frac{1}{8}]$	[1,8,14,15]
2	$[\frac{1}{2}, \frac{1}{2}, \frac{3}{8}]$	[2,4,11,13]
3	$[\frac{1}{2}, \frac{1}{2}, \frac{7}{8}]$	[3,5,10,12]
4	$[\frac{1}{2}, \frac{1}{2}, \frac{5}{8}]$	[6,7,9,16]

Table 7: Wyckoff site: 8g, site symmetry: 2'..

No.	position	mapping
1	$[0, 0, z]$	[1,14]
2	$[0, 0, z + \frac{1}{4}]$	[2,11]
3	$[0, 0, z + \frac{3}{4}]$	[3,10]
4	$[0, 0, \frac{1}{2} - z]$	[4,13]
5	$[0, 0, -z]$	[5,12]
6	$[0, 0, z + \frac{1}{2}]$	[6,9]
7	$[0, 0, \frac{3}{4} - z]$	[7,16]
8	$[0, 0, \frac{1}{4} - z]$	[8,15]

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

No.	position	mapping
1	$[\frac{1}{2}, \frac{1}{2}, z]$	[1,14]
2	$[\frac{1}{2}, \frac{1}{2}, z + \frac{1}{4}]$	[2,11]
3	$[\frac{1}{2}, \frac{1}{2}, z + \frac{3}{4}]$	[3,10]
4	$[\frac{1}{2}, \frac{1}{2}, \frac{1}{2} - z]$	[4,13]
5	$[\frac{1}{2}, \frac{1}{2}, -z]$	[5,12]
6	$[\frac{1}{2}, \frac{1}{2}, z + \frac{1}{2}]$	[6,9]
7	$[\frac{1}{2}, \frac{1}{2}, \frac{3}{4} - z]$	[7,16]
8	$[\frac{1}{2}, \frac{1}{2}, \frac{1}{4} - z]$	[8,15]

Table 9: Wyckoff site: 8i, site symmetry: 2' ..

No.	position	mapping
1	$[\frac{1}{2}, 0, z]$	[1,14]
2	$[0, \frac{1}{2}, z + \frac{1}{4}]$	[2,11]
3	$[0, \frac{1}{2}, z + \frac{3}{4}]$	[3,10]
4	$[\frac{1}{2}, 0, \frac{1}{2} - z]$	[4,13]
5	$[\frac{1}{2}, 0, -z]$	[5,12]
6	$[\frac{1}{2}, 0, z + \frac{1}{2}]$	[6,9]
7	$[0, \frac{1}{2}, \frac{3}{4} - z]$	[7,16]
8	$[0, \frac{1}{2}, \frac{1}{4} - z]$	[8,15]

Table 10: Wyckoff site: 8j, site symmetry: .2.

No.	position	mapping
1	$[0, y, 0]$	[1,5]
2	$[-y, 0, \frac{1}{4}]$	[2,8]
3	$[y, 0, \frac{3}{4}]$	[3,7]
4	$[0, -y, \frac{1}{2}]$	[4,6]
5	$[0, y, \frac{1}{2}]$	[9,13]
6	$[-y, 0, \frac{3}{4}]$	[10,16]
7	$[y, 0, \frac{1}{4}]$	[11,15]
8	$[0, -y, 0]$	[12,14]

Table 11: Wyckoff site: 8k, site symmetry: .2'.

No.	position	mapping
1	$[\frac{1}{2}, y, \frac{1}{4}]$	[1,13]
2	$[-y, \frac{1}{2}, \frac{1}{2}]$	[2,16]
3	$[y, \frac{1}{2}, 0]$	[3,15]
4	$[\frac{1}{2}, -y, \frac{1}{4}]$	[4,14]
5	$[\frac{1}{2}, y, \frac{3}{4}]$	[5,9]
6	$[\frac{1}{2}, -y, \frac{3}{4}]$	[6,12]
7	$[y, \frac{1}{2}, \frac{1}{2}]$	[7,11]
8	$[-y, \frac{1}{2}, 0]$	[8,10]

Table 12: Wyckoff site: 8l, site symmetry: .2'.

No.	position	mapping
1	$[0, y, \frac{1}{4}]$	[1,13]
2	$[-y, 0, \frac{1}{2}]$	[2,16]
3	$[y, 0, 0]$	[3,15]

continued ...

Table 12

No.	position	mapping
4	$[0, -y, \frac{1}{4}]$	[4,14]
5	$[0, y, \frac{3}{4}]$	[5,9]
6	$[0, -y, \frac{3}{4}]$	[6,12]
7	$[y, 0, \frac{1}{2}]$	[7,11]
8	$[-y, 0, 0]$	[8,10]

Table 13: Wyckoff site: 8m, site symmetry: .2.

No.	position	mapping
1	$[\frac{1}{2}, y, 0]$	[1,5]
2	$[-y, \frac{1}{2}, \frac{1}{4}]$	[2,8]
3	$[y, \frac{1}{2}, \frac{3}{4}]$	[3,7]
4	$[\frac{1}{2}, -y, \frac{1}{2}]$	[4,6]
5	$[\frac{1}{2}, y, \frac{1}{2}]$	[9,13]
6	$[-y, \frac{1}{2}, \frac{3}{4}]$	[10,16]
7	$[y, \frac{1}{2}, \frac{1}{4}]$	[11,15]
8	$[\frac{1}{2}, -y, 0]$	[12,14]

Table 14: Wyckoff site: 8n, site symmetry: ...2

No.	position	mapping
1	$[x, -x, \frac{1}{8}]$	[1,8]
2	$[x, x, \frac{3}{8}]$	[2,4]
3	$[-x, -x, \frac{7}{8}]$	[3,5]
4	$[-x, x, \frac{5}{8}]$	[6,7]
5	$[x, -x, \frac{5}{8}]$	[9,16]
6	$[x, x, \frac{7}{8}]$	[10,12]
7	$[-x, -x, \frac{3}{8}]$	[11,13]
8	$[-x, x, \frac{1}{8}]$	[14,15]

Table 15: Wyckoff site: 8o, site symmetry: ...2'

No.	position	mapping
1	$[x, -x, \frac{3}{8}]$	[1,16]
2	$[x, x, \frac{5}{8}]$	[2,12]
3	$[-x, -x, \frac{1}{8}]$	[3,13]
4	$[x, x, \frac{1}{8}]$	[4,10]
5	$[-x, -x, \frac{5}{8}]$	[5,11]
6	$[-x, x, \frac{7}{8}]$	[6,15]

continued ...

Table 15

No.	position	mapping
7	$[-x, x, \frac{3}{8}]$	[7,14]
8	$[x, -x, \frac{7}{8}]$	[8,9]

Table 16: Wyckoff site: 16p, site symmetry: 1

No.	position	mapping
1	$[x, y, z]$	[1]
2	$[-y, x, z + \frac{1}{4}]$	[2]
3	$[y, -x, z + \frac{3}{4}]$	[3]
4	$[x, -y, \frac{1}{2} - z]$	[4]
5	$[-x, y, -z]$	[5]
6	$[-x, -y, z + \frac{1}{2}]$	[6]
7	$[y, x, \frac{3}{4} - z]$	[7]
8	$[-y, -x, \frac{1}{4} - z]$	[8]
9	$[x, y, z + \frac{1}{2}]$	[9]
10	$[-y, x, z + \frac{3}{4}]$	[10]
11	$[y, -x, z + \frac{1}{4}]$	[11]
12	$[x, -y, -z]$	[12]
13	$[-x, y, \frac{1}{2} - z]$	[13]
14	$[-x, -y, z]$	[14]
15	$[y, x, \frac{1}{4} - z]$	[15]
16	$[-y, -x, \frac{3}{4} - z]$	[16]