

MSG No. 132.449 $P4_2/m'cm$ [Type III, tetragonal]

Table 1: Wyckoff site: 2a, site symmetry: $m'.mm$

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

Table 2: Wyckoff site: 2b, site symmetry: $-4'2'm$

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

Table 3: Wyckoff site: 2c, site symmetry: $m'.mm$

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

Table 4: Wyckoff site: 2d, site symmetry: $-4'2'm$

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

Table 5: Wyckoff site: 4e, site symmetry: $22'2'.$

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

Table 6: Wyckoff site: **4f**, site symmetry: $2/m'..$

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

Table 7: Wyckoff site: **4g**, site symmetry: $2\cdot mm$

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

Table 8: Wyckoff site: **4h**, site symmetry: $2\cdot mm$

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

Table 9: Wyckoff site: **4i**, site symmetry: $m' . 2'm$

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

Table 10: Wyckoff site: **4j**, site symmetry: $m' . 2'm$

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

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

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

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

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

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

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

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

No.	position	mapping
1	$[x, y, 0]$	[1,16]
2	$[-y, x, \frac{1}{2}]$	[2,15]
3	$[y, -x, \frac{1}{2}]$	[3,14]

continued ...

Table 14

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

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

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

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

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