

MSG No. 67.503 *Cm'ma* [ Type III, orthorhombic ]

Table 1: Wyckoff site: **4a**, site symmetry:  $22'2'$

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

Table 2: Wyckoff site: **4b**, site symmetry:  $22'2'$

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

Table 3: Wyckoff site: **4c**, site symmetry:  $2/m'..$

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

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

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

Table 5: Wyckoff site: **4e**, site symmetry:  $.2'/m.$

No.	position	mapping
1	$[\frac{1}{4}, \frac{1}{4}, 0]$	[1,5,11,15]
2	$[\frac{1}{4}, \frac{3}{4}, 0]$	[2,6,12,16]

*continued ...*

Table 5

No.	position	mapping
3	$[\frac{3}{4}, \frac{3}{4}, 0]$	[3,7,9,13]
4	$[\frac{3}{4}, \frac{1}{4}, 0]$	[4,8,10,14]

Table 6: Wyckoff site: 4f, site symmetry: .2'/ $\bar{m}$ .

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

Table 7: Wyckoff site: 4g, site symmetry:  $\bar{m}'\bar{m}2'$ 

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

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

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

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

No.	position	mapping
1	$[x, 0, \frac{1}{2}]$	[1,2]
2	$[x + \frac{1}{2}, 0, \frac{1}{2}]$	[3,4]
3	$[\frac{1}{2} - x, 0, \frac{1}{2}]$	[5,6]

*continued ...*

Table 9

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

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

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

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

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

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

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

continued ...

Table 12

No.	position	mapping
7	$[\frac{1}{4}, \frac{1}{2}, z]$	[11,16]
8	$[\frac{1}{4}, \frac{1}{2}, -z]$	[12,15]

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

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

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

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

Table 15: Wyckoff site: 16o, site symmetry: 1

No.	position	mapping
1	$[x, y, z]$	[1]
2	$[x, -y, -z]$	[2]
3	$[x + \frac{1}{2}, -y, z]$	[3]
4	$[x + \frac{1}{2}, y, -z]$	[4]
5	$[\frac{1}{2} - x, y, -z]$	[5]
6	$[\frac{1}{2} - x, -y, z]$	[6]
7	$[-x, -y, -z]$	[7]
8	$[-x, y, z]$	[8]
9	$[x + \frac{1}{2}, y + \frac{1}{2}, z]$	[9]

continued ...

Table 15

No.	position	mapping
10	$[x + \frac{1}{2}, \frac{1}{2} - y, -z]$	[10]
11	$[x, \frac{1}{2} - y, z]$	[11]
12	$[x, y + \frac{1}{2}, -z]$	[12]
13	$[-x, y + \frac{1}{2}, -z]$	[13]
14	$[-x, \frac{1}{2} - y, z]$	[14]
15	$[\frac{1}{2} - x, \frac{1}{2} - y, -z]$	[15]
16	$[\frac{1}{2} - x, y + \frac{1}{2}, z]$	[16]