

MSG No. 135.489 $P4_2/m b'c'$ [Type III, tetragonal]

Table 1: Wyckoff site: 4a, site symmetry: 2/m..

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

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

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

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

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

Table 4: Wyckoff site: 4d, site symmetry: 2.2'2'

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

Table 5: Wyckoff site: 8e, site symmetry: 2..

No.	position	mapping
1	[0, 0, z]	[1, 4]
2	[0, 0, $z + \frac{1}{2}$]	[2, 3]

continued ...

Table 5

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

Table 6: Wyckoff site: 8f, 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	$[0, \frac{1}{2}, -z]$	[5,8]
4	$[\frac{1}{2}, 0, \frac{1}{2} - z]$	[6,7]
5	$[\frac{1}{2}, 0, -z]$	[9,10]
6	$[0, \frac{1}{2}, \frac{1}{2} - z]$	[11,12]
7	$[\frac{1}{2}, 0, z]$	[13,14]
8	$[0, \frac{1}{2}, z + \frac{1}{2}]$	[15,16]

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

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

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

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

continued ...

Table 8

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

Table 9: Wyckoff site: 16i, 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	$[-x, -y, -z]$	[5]
6	$[y, -x, \frac{1}{2} - z]$	[6]
7	$[-y, x, \frac{1}{2} - z]$	[7]
8	$[x, y, -z]$	[8]
9	$[x + \frac{1}{2}, \frac{1}{2} - y, -z]$	[9]
10	$[\frac{1}{2} - x, y + \frac{1}{2}, -z]$	[10]
11	$[y + \frac{1}{2}, x + \frac{1}{2}, \frac{1}{2} - z]$	[11]
12	$[\frac{1}{2} - y, \frac{1}{2} - x, \frac{1}{2} - z]$	[12]
13	$[\frac{1}{2} - x, y + \frac{1}{2}, z]$	[13]
14	$[x + \frac{1}{2}, \frac{1}{2} - y, z]$	[14]
15	$[\frac{1}{2} - y, \frac{1}{2} - x, z + \frac{1}{2}]$	[15]
16	$[y + \frac{1}{2}, x + \frac{1}{2}, z + \frac{1}{2}]$	[16]