

MSG No. 54.350  $P_{Bcc}$  [ Type IV, orthorhombic ]

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

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

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

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

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

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

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

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

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

No.	position	mapping
1	$[0, 0, 0]$	[1, 5, 10, 14]
2	$[\frac{1}{2}, 0, \frac{1}{2}]$	[2, 6, 9, 13]

*continued ...*

Table 5

No.	position	mapping
3	$[0, 0, \frac{1}{2}]$	[3, 7, 12, 16]
4	$[\frac{1}{2}, 0, 0]$	[4, 8, 11, 15]

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

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

Table 7: Wyckoff site: 4g, site symmetry:  $m'2m'$ 

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

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

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

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

No.	position	mapping
1	$[\frac{3}{4}, \frac{1}{2}, z]$	[1, 4]
2	$[\frac{1}{4}, \frac{1}{2}, \frac{1}{2} - z]$	[2, 3]
3	$[\frac{1}{4}, \frac{1}{2}, -z]$	[5, 8]

*continued ...*

Table 9

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

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

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

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

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

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

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

continued ...

Table 12

No.	position	mapping
7	$[\frac{3}{4}, -y, \frac{1}{2}]$	[7,13]
8	$[\frac{1}{4}, y, 0]$	[8,14]

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

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

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

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

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

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

continued ...

Table 15

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