

MSG No. 60.430  $P_Bbcn$  [ Type IV, orthorhombic ]

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

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

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

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

Table 3: Wyckoff site: 8c, site symmetry:  $-1$

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

Table 4: Wyckoff site: 8d, site symmetry:  $-1'$

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

Table 5: Wyckoff site: 8e, site symmetry:  $\dots 2'$ 

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

Table 6: Wyckoff site: 8f, site symmetry:  $2' \dots$ 

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

Table 7: Wyckoff site: 8g, site symmetry:  $\dots 2$ 

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

Table 8: Wyckoff site: 8h, site symmetry:  $\dots 2'$ 

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

*continued ...*

Table 8

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

Table 9: Wyckoff site: **16i**, site symmetry: **1**

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