

MSG No. 121.328 $I\bar{4}2m1'$ [Type II, tetragonal]

Table 1: Wyckoff site: 2a, site symmetry: $-42m1'$

No.	position	mapping
1	$[0, 0, 0]$	$[1, 2, 3, 4, 5, 6, 7, 8, 17, 18, 19, 20, 21, 22, 23, 24]$
2	$[\frac{1}{2}, \frac{1}{2}, \frac{1}{2}]$	$[9, 10, 11, 12, 13, 14, 15, 16, 25, 26, 27, 28, 29, 30, 31, 32]$

Table 2: Wyckoff site: 2b, site symmetry: $-42m1'$

No.	position	mapping
1	$[0, 0, \frac{1}{2}]$	$[1, 2, 3, 4, 5, 6, 7, 8, 17, 18, 19, 20, 21, 22, 23, 24]$
2	$[\frac{1}{2}, \frac{1}{2}, 0]$	$[9, 10, 11, 12, 13, 14, 15, 16, 25, 26, 27, 28, 29, 30, 31, 32]$

Table 3: Wyckoff site: 4c, site symmetry: $222.1'$

No.	position	mapping
1	$[0, \frac{1}{2}, 0]$	$[1, 2, 3, 4, 17, 18, 19, 20]$
2	$[\frac{1}{2}, 0, 0]$	$[5, 6, 7, 8, 21, 22, 23, 24]$
3	$[\frac{1}{2}, 0, \frac{1}{2}]$	$[9, 10, 11, 12, 25, 26, 27, 28]$
4	$[0, \frac{1}{2}, \frac{1}{2}]$	$[13, 14, 15, 16, 29, 30, 31, 32]$

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

No.	position	mapping
1	$[0, \frac{1}{2}, \frac{1}{4}]$	$[1, 4, 13, 14, 17, 20, 29, 30]$
2	$[0, \frac{1}{2}, \frac{3}{4}]$	$[2, 3, 15, 16, 18, 19, 31, 32]$
3	$[\frac{1}{2}, 0, \frac{3}{4}]$	$[5, 6, 9, 12, 21, 22, 25, 28]$
4	$[\frac{1}{2}, 0, \frac{1}{4}]$	$[7, 8, 10, 11, 23, 24, 26, 27]$

Table 5: Wyckoff site: 4e, site symmetry: $2.mm1'$

No.	position	mapping
1	$[0, 0, z]$	$[1, 4, 7, 8, 17, 20, 23, 24]$
2	$[0, 0, -z]$	$[2, 3, 5, 6, 18, 19, 21, 22]$
3	$[\frac{1}{2}, \frac{1}{2}, z + \frac{1}{2}]$	$[9, 12, 15, 16, 25, 28, 31, 32]$
4	$[\frac{1}{2}, \frac{1}{2}, \frac{1}{2} - z]$	$[10, 11, 13, 14, 26, 27, 29, 30]$

Table 6: Wyckoff site: **8f**, site symmetry: $.2.1'$

No.	position	mapping
1	$[x, 0, 0]$	$[1, 2, 17, 18]$
2	$[-x, 0, 0]$	$[3, 4, 19, 20]$
3	$[0, -x, 0]$	$[5, 7, 21, 23]$
4	$[0, x, 0]$	$[6, 8, 22, 24]$
5	$[x + \frac{1}{2}, \frac{1}{2}, \frac{1}{2}]$	$[9, 10, 25, 26]$
6	$[\frac{1}{2} - x, \frac{1}{2}, \frac{1}{2}]$	$[11, 12, 27, 28]$
7	$[\frac{1}{2}, \frac{1}{2} - x, \frac{1}{2}]$	$[13, 15, 29, 31]$
8	$[\frac{1}{2}, x + \frac{1}{2}, \frac{1}{2}]$	$[14, 16, 30, 32]$

Table 7: Wyckoff site: **8g**, site symmetry: $.2.1'$

No.	position	mapping
1	$[x, 0, \frac{1}{2}]$	$[1, 2, 17, 18]$
2	$[-x, 0, \frac{1}{2}]$	$[3, 4, 19, 20]$
3	$[0, -x, \frac{1}{2}]$	$[5, 7, 21, 23]$
4	$[0, x, \frac{1}{2}]$	$[6, 8, 22, 24]$
5	$[x + \frac{1}{2}, \frac{1}{2}, 0]$	$[9, 10, 25, 26]$
6	$[\frac{1}{2} - x, \frac{1}{2}, 0]$	$[11, 12, 27, 28]$
7	$[\frac{1}{2}, \frac{1}{2} - x, 0]$	$[13, 15, 29, 31]$
8	$[\frac{1}{2}, x + \frac{1}{2}, 0]$	$[14, 16, 30, 32]$

Table 8: Wyckoff site: **8h**, site symmetry: $2..1'$

No.	position	mapping
1	$[0, \frac{1}{2}, z]$	$[1, 4, 17, 20]$
2	$[0, \frac{1}{2}, -z]$	$[2, 3, 18, 19]$
3	$[\frac{1}{2}, 0, -z]$	$[5, 6, 21, 22]$
4	$[\frac{1}{2}, 0, z]$	$[7, 8, 23, 24]$
5	$[\frac{1}{2}, 0, z + \frac{1}{2}]$	$[9, 12, 25, 28]$
6	$[\frac{1}{2}, 0, \frac{1}{2} - z]$	$[10, 11, 26, 27]$
7	$[0, \frac{1}{2}, \frac{1}{2} - z]$	$[13, 14, 29, 30]$
8	$[0, \frac{1}{2}, z + \frac{1}{2}]$	$[15, 16, 31, 32]$

Table 9: Wyckoff site: **8i**, site symmetry: $..m1'$

No.	position	mapping
1	$[x, x, z]$	$[1, 8, 17, 24]$
2	$[x, -x, -z]$	$[2, 5, 18, 21]$
3	$[-x, x, -z]$	$[3, 6, 19, 22]$

continued ...

Table 9

No.	position	mapping
4	$[-x, -x, z]$	$[4, 7, 20, 23]$
5	$[x + \frac{1}{2}, x + \frac{1}{2}, z + \frac{1}{2}]$	$[9, 16, 25, 32]$
6	$[x + \frac{1}{2}, \frac{1}{2} - x, \frac{1}{2} - z]$	$[10, 13, 26, 29]$
7	$[\frac{1}{2} - x, x + \frac{1}{2}, \frac{1}{2} - z]$	$[11, 14, 27, 30]$
8	$[\frac{1}{2} - x, \frac{1}{2} - x, z + \frac{1}{2}]$	$[12, 15, 28, 31]$

Table 10: Wyckoff site: $16j$, site symmetry: $11'$

No.	position	mapping
1	$[x, y, z]$	$[1, 17]$
2	$[x, -y, -z]$	$[2, 18]$
3	$[-x, y, -z]$	$[3, 19]$
4	$[-x, -y, z]$	$[4, 20]$
5	$[y, -x, -z]$	$[5, 21]$
6	$[-y, x, -z]$	$[6, 22]$
7	$[-y, -x, z]$	$[7, 23]$
8	$[y, x, z]$	$[8, 24]$
9	$[x + \frac{1}{2}, y + \frac{1}{2}, z + \frac{1}{2}]$	$[9, 25]$
10	$[x + \frac{1}{2}, \frac{1}{2} - y, \frac{1}{2} - z]$	$[10, 26]$
11	$[\frac{1}{2} - x, y + \frac{1}{2}, \frac{1}{2} - z]$	$[11, 27]$
12	$[\frac{1}{2} - x, \frac{1}{2} - y, z + \frac{1}{2}]$	$[12, 28]$
13	$[y + \frac{1}{2}, \frac{1}{2} - x, \frac{1}{2} - z]$	$[13, 29]$
14	$[\frac{1}{2} - y, x + \frac{1}{2}, \frac{1}{2} - z]$	$[14, 30]$
15	$[\frac{1}{2} - y, \frac{1}{2} - x, z + \frac{1}{2}]$	$[15, 31]$
16	$[y + \frac{1}{2}, x + \frac{1}{2}, z + \frac{1}{2}]$	$[16, 32]$