# MSG No. 62.450 $P_anma$ [ Type IV, orthorhombic ]

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

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

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

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

Table 3: Wyckoff site: `8c`, site symmetry: `-1'`

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

Table 4: Wyckoff site: `8d`, site symmetry: `-1`

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

Table 5: Wyckoff site: `8e`, site symmetry: `..m'`

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

Table 6: Wyckoff site: `8f`, site symmetry: `.m.`

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

Table 7: Wyckoff site: `16g`, site symmetry: `1`

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