# MSG No. 57.390 $P_Bbcm$ [ Type IV, orthorhombic ]

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

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

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

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

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

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

Table 4: Wyckoff site: `8d`, site symmetry: `..2'`

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

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

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

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

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

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

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