# MSG No. 59.411 $Pm'm'n'$ [ Type III, orthorhombic ]

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

| No. | position | mapping |
|---|---|---|
| 1 | $\left[\frac{1}{4}, \frac{1}{4}, z\right]$ | `[1,4,6,7]` |
| 2 | $\left[\frac{3}{4}, \frac{3}{4}, -z\right]$ | `[2,3,5,8]` |

Table 2: Wyckoff site: `2b`, site symmetry: `m'm'2`

| No. | position | mapping |
|---|---|---|
| 1 | $\left[\frac{1}{4}, \frac{3}{4}, z\right]$ | `[1,4,6,7]` |
| 2 | $\left[\frac{3}{4}, \frac{1}{4}, -z\right]$ | `[2,3,5,8]` |

Table 3: Wyckoff site: `4c`, site symmetry: `-1'`

| No. | position | mapping |
|---|---|---|
| 1 | $[0, 0, 0]$ | `[1,5]` |
| 2 | $\left[\frac{1}{2}, 0, 0\right]$ | `[2,6]` |
| 3 | $\left[0, \frac{1}{2}, 0\right]$ | `[3,7]` |
| 4 | $\left[\frac{1}{2}, \frac{1}{2}, 0\right]$ | `[4,8]` |

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

| No. | position | mapping |
|---|---|---|
| 1 | $\left[0, 0, \frac{1}{2}\right]$ | `[1,5]` |
| 2 | $\left[\frac{1}{2}, 0, \frac{1}{2}\right]$ | `[2,6]` |
| 3 | $\left[0, \frac{1}{2}, \frac{1}{2}\right]$ | `[3,7]` |
| 4 | $\left[\frac{1}{2}, \frac{1}{2}, \frac{1}{2}\right]$ | `[4,8]` |

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

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

Table 6: Wyckoff site: `4f`, site symmetry: `.m'.`

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

Table 7: Wyckoff site: `8g`, site symmetry: `1`

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