SG No. 209 O^3 $F432$ [cubic]

* plus set: $+[0,\,0,\,0]$, $+\left[0,\,\frac{1}{2},\,\frac{1}{2}\right]$, $+\left[\frac{1}{2},\,0,\,\frac{1}{2}\right]$, $+\left[\frac{1}{2},\,\frac{1}{2},\,0\right]$

Table 1: Wyckoff site: `4a`, site symmetry: `432`

No.	position	mapping
1	$[0,\,0,\,0]$	`[1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24]`

Table 2: Wyckoff site: `4b`, site symmetry: `432`

No.	position	mapping
1	$\left[\frac{1}{2},\,\frac{1}{2},\,\frac{1}{2}\right]$	`[1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24]`

Table 3: Wyckoff site: `8c`, site symmetry: `23.`

No.	position	mapping
1	$\left[\frac{1}{4},\,\frac{1}{4},\,\frac{1}{4}\right]$	`[1,2,3,4,5,6,7,8,9,10,11,12]`
2	$\left[\frac{1}{4},\,\frac{1}{4},\,\frac{3}{4}\right]$	`[13,14,15,16,17,18,19,20,21,22,23,24]`

Table 4: Wyckoff site: `24d`, site symmetry: `2.22`

No.	position	mapping
1	$\left[0,\,\frac{1}{4},\,\frac{1}{4}\right]$	`[1,4,18,19]`
2	$\left[0,\,\frac{3}{4},\,\frac{1}{4}\right]$	`[2,3,17,20]`
3	$\left[\frac{1}{4},\,0,\,\frac{1}{4}\right]$	`[5,8,14,15]`
4	$\left[\frac{1}{4},\,0,\,\frac{3}{4}\right]$	`[6,7,13,16]`
5	$\left[\frac{1}{4},\,\frac{1}{4},\,0\right]$	`[9,12,21,24]`
6	$\left[\frac{3}{4},\,\frac{1}{4},\,0\right]$	`[10,11,22,23]`

Table 5: Wyckoff site: `24e`, site symmetry: `4..`

No.	position	mapping
1	$[x,\,0,\,0]$	`[1,4,17,20]`
2	$[-x,\,0,\,0]$	`[2,3,18,19]`
3	$[0,\,x,\,0]$	`[5,8,13,16]`
4	$[0,\,-x,\,0]$	`[6,7,14,15]`
5	$[0,\,0,\,x]$	`[9,12,22,23]`
6	$[0,\,0,\,-x]$	`[10,11,21,24]`

Table 6: Wyckoff site: `32f`, site symmetry: `.3.`

No.	position	mapping
1	$[x,\ x,\ x]$	`[1,5,9]`
2	$[-x,\ -x,\ x]$	`[2,7,12]`
3	$[-x,\ x,\ -x]$	`[3,8,10]`
4	$[x,\ -x,\ -x]$	`[4,6,11]`
5	$[x,\ x,\ -x]$	`[13,17,21]`
6	$[-x,\ -x,\ -x]$	`[14,19,24]`
7	$[x,\ -x,\ x]$	`[15,20,22]`
8	$[-x,\ x,\ x]$	`[16,18,23]`

Table 7: Wyckoff site: `48g`, site symmetry: `..2`

No.	position	mapping
1	$[0,\ y,\ y]$	`[1,18]`
2	$[0,\ -y,\ y]$	`[2,20]`
3	$[0,\ y,\ -y]$	`[3,17]`
4	$[0,\ -y,\ -y]$	`[4,19]`
5	$[y,\ 0,\ y]$	`[5,15]`
6	$[y,\ 0,\ -y]$	`[6,13]`
7	$[-y,\ 0,\ y]$	`[7,16]`
8	$[-y,\ 0,\ -y]$	`[8,14]`
9	$[y,\ y,\ 0]$	`[9,21]`
10	$[-y,\ y,\ 0]$	`[10,23]`
11	$[y,\ -y,\ 0]$	`[11,22]`
12	$[-y,\ -y,\ 0]$	`[12,24]`

Table 8: Wyckoff site: `48h`, site symmetry: `..2`

No.	position	mapping
1	$\left[\frac{1}{2},\ y,\ y\right]$	`[1,18]`
2	$\left[\frac{1}{2},\ -y,\ y\right]$	`[2,20]`
3	$\left[\frac{1}{2},\ y,\ -y\right]$	`[3,17]`
4	$\left[\frac{1}{2},\ -y,\ -y\right]$	`[4,19]`
5	$\left[y,\ \frac{1}{2},\ y\right]$	`[5,15]`
6	$\left[y,\ \frac{1}{2},\ -y\right]$	`[6,13]`
7	$\left[-y,\ \frac{1}{2},\ y\right]$	`[7,16]`
8	$\left[-y,\ \frac{1}{2},\ -y\right]$	`[8,14]`
9	$\left[y,\ y,\ \frac{1}{2}\right]$	`[9,21]`
10	$\left[-y,\ y,\ \frac{1}{2}\right]$	`[10,23]`
11	$\left[y,\ -y,\ \frac{1}{2}\right]$	`[11,22]`
12	$\left[-y,\ -y,\ \frac{1}{2}\right]$	`[12,24]`

Table 9: Wyckoff site: `48i`, site symmetry: `2..`

No.	position	mapping
1	$\left[x,\ \frac{1}{4},\ \frac{1}{4}\right]$	`[1,4]`
2	$\left[-x,\ \frac{3}{4},\ \frac{1}{4}\right]$	`[2,3]`
3	$\left[\frac{1}{4},\ x,\ \frac{1}{4}\right]$	`[5,8]`
4	$\left[\frac{1}{4},\ -x,\ \frac{3}{4}\right]$	`[6,7]`
5	$\left[\frac{1}{4},\ \frac{1}{4},\ x\right]$	`[9,12]`
6	$\left[\frac{3}{4},\ \frac{1}{4},\ -x\right]$	`[10,11]`
7	$\left[\frac{1}{4},\ x,\ \frac{3}{4}\right]$	`[13,16]`
8	$\left[\frac{3}{4},\ -x,\ \frac{3}{4}\right]$	`[14,15]`
9	$\left[x,\ \frac{1}{4},\ \frac{3}{4}\right]$	`[17,20]`
10	$\left[-x,\ \frac{1}{4},\ \frac{1}{4}\right]$	`[18,19]`
11	$\left[\frac{1}{4},\ \frac{1}{4},\ -x\right]$	`[21,24]`
12	$\left[\frac{1}{4},\ \frac{3}{4},\ x\right]$	`[22,23]`

Table 10: Wyckoff site: `96j`, site symmetry: `1`

No.	position	mapping
1	$[x,\ y,\ z]$	`[1]`
2	$[-x,\ -y,\ z]$	`[2]`
3	$[-x,\ y,\ -z]$	`[3]`
4	$[x,\ -y,\ -z]$	`[4]`
5	$[z,\ x,\ y]$	`[5]`
6	$[z,\ -x,\ -y]$	`[6]`
7	$[-z,\ -x,\ y]$	`[7]`
8	$[-z,\ x,\ -y]$	`[8]`
9	$[y,\ z,\ x]$	`[9]`
10	$[-y,\ z,\ -x]$	`[10]`
11	$[y,\ -z,\ -x]$	`[11]`
12	$[-y,\ -z,\ x]$	`[12]`
13	$[y,\ x,\ -z]$	`[13]`
14	$[-y,\ -x,\ -z]$	`[14]`
15	$[y,\ -x,\ z]$	`[15]`
16	$[-y,\ x,\ z]$	`[16]`
17	$[x,\ z,\ -y]$	`[17]`
18	$[-x,\ z,\ y]$	`[18]`
19	$[-x,\ -z,\ -y]$	`[19]`
20	$[x,\ -z,\ y]$	`[20]`
21	$[z,\ y,\ -x]$	`[21]`
22	$[z,\ -y,\ x]$	`[22]`
23	$[-z,\ y,\ x]$	`[23]`
24	$[-z,\ -y,\ -x]$	`[24]`