SG No. 203 T_{h}^4 $Fd\bar{3}$ [cubic]

* plus set: $+[0,\,0,\,0]$, $+\left[0,\,\frac{1}{2},\,\frac{1}{2}\right]$, $+\left[\frac{1}{2},\,0,\,\frac{1}{2}\right]$, $+\left[\frac{1}{2},\,\frac{1}{2},\,0\right]$
* Wyckoff site: `8a`, site symmetry: `23.`

Table 1: Wyckoff bond: `24a@8a`

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

Table 2: Wyckoff bond: `32b@8a`

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

Table 3: Wyckoff bond: `48c@8a`

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

Table 4: Wyckoff bond: `96d@8a`

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

* Wyckoff site: `8b`, site symmetry: `23.`

Table 5: Wyckoff bond: `24a@8b`

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

Table 6: Wyckoff bond: `32b@8b`

No.	vector	center	mapping
1	$[X, X, X]$	$[\frac{5}{8}, \frac{5}{8}, \frac{5}{8}]$	`[1,5,9]`
2	$[-X, -X, X]$	$[\frac{5}{8}, \frac{5}{8}, \frac{5}{8}]$	`[2,7,12]`

continued ...

Table 6

No.	vector	center	mapping
3	$[-X, X, -X]$	$[\frac{5}{8}, \frac{5}{8}, \frac{5}{8}]$	`[3,8,10]`
4	$[X, -X, -X]$	$[\frac{5}{8}, \frac{5}{8}, \frac{5}{8}]$	`[4,6,11]`
5	$[-X, -X, -X]$	$[\frac{3}{8}, \frac{3}{8}, \frac{3}{8}]$	`[13,17,21]`
6	$[X, X, -X]$	$[\frac{3}{8}, \frac{3}{8}, \frac{3}{8}]$	`[14,19,24]`
7	$[X, -X, X]$	$[\frac{3}{8}, \frac{3}{8}, \frac{3}{8}]$	`[15,20,22]`
8	$[-X, X, X]$	$[\frac{3}{8}, \frac{3}{8}, \frac{3}{8}]$	`[16,18,23]`

Table 7: Wyckoff bond: `48c@8b`

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

Table 8: Wyckoff bond: `96d@8b`

No.	vector	center	mapping
1	$[X, Y, Z]$	$[\frac{5}{8}, \frac{5}{8}, \frac{5}{8}]$	`[1]`
2	$[-X, -Y, Z]$	$[\frac{5}{8}, \frac{5}{8}, \frac{5}{8}]$	`[2]`
3	$[-X, Y, -Z]$	$[\frac{5}{8}, \frac{5}{8}, \frac{5}{8}]$	`[3]`
4	$[X, -Y, -Z]$	$[\frac{5}{8}, \frac{5}{8}, \frac{5}{8}]$	`[4]`
5	$[Z, X, Y]$	$[\frac{5}{8}, \frac{5}{8}, \frac{5}{8}]$	`[5]`
6	$[Z, -X, -Y]$	$[\frac{5}{8}, \frac{5}{8}, \frac{5}{8}]$	`[6]`
7	$[-Z, -X, Y]$	$[\frac{5}{8}, \frac{5}{8}, \frac{5}{8}]$	`[7]`
8	$[-Z, X, -Y]$	$[\frac{5}{8}, \frac{5}{8}, \frac{5}{8}]$	`[8]`
9	$[Y, Z, X]$	$[\frac{5}{8}, \frac{5}{8}, \frac{5}{8}]$	`[9]`
10	$[-Y, Z, -X]$	$[\frac{5}{8}, \frac{5}{8}, \frac{5}{8}]$	`[10]`
11	$[Y, -Z, -X]$	$[\frac{5}{8}, \frac{5}{8}, \frac{5}{8}]$	`[11]`
12	$[-Y, -Z, X]$	$[\frac{5}{8}, \frac{5}{8}, \frac{5}{8}]$	`[12]`
13	$[-X, -Y, -Z]$	$[\frac{3}{8}, \frac{3}{8}, \frac{3}{8}]$	`[13]`
14	$[X, Y, -Z]$	$[\frac{3}{8}, \frac{3}{8}, \frac{3}{8}]$	`[14]`
15	$[X, -Y, Z]$	$[\frac{3}{8}, \frac{3}{8}, \frac{3}{8}]$	`[15]`
16	$[-X, Y, Z]$	$[\frac{3}{8}, \frac{3}{8}, \frac{3}{8}]$	`[16]`

continued ...

Table 8

No.	vector	center	mapping
17	$[-Z, -X, -Y]$	$\left[\frac{3}{8}, \frac{3}{8}, \frac{3}{8}\right]$	`[17]`
18	$[-Z, X, Y]$	$\left[\frac{3}{8}, \frac{3}{8}, \frac{3}{8}\right]$	`[18]`
19	$[Z, X, -Y]$	$\left[\frac{3}{8}, \frac{3}{8}, \frac{3}{8}\right]$	`[19]`
20	$[Z, -X, Y]$	$\left[\frac{3}{8}, \frac{3}{8}, \frac{3}{8}\right]$	`[20]`
21	$[-Y, -Z, -X]$	$\left[\frac{3}{8}, \frac{3}{8}, \frac{3}{8}\right]$	`[21]`
22	$[Y, -Z, X]$	$\left[\frac{3}{8}, \frac{3}{8}, \frac{3}{8}\right]$	`[22]`
23	$[-Y, Z, X]$	$\left[\frac{3}{8}, \frac{3}{8}, \frac{3}{8}\right]$	`[23]`
24	$[Y, Z, -X]$	$\left[\frac{3}{8}, \frac{3}{8}, \frac{3}{8}\right]$	`[24]`

* Wyckoff site: `16c`, site symmetry: `.-3.`

Table 9: Wyckoff bond: `16a@16c`

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

Table 10: Wyckoff bond: `48b@16c`

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

* Wyckoff site: `16d`, site symmetry: `.-3.`

Table 11: Wyckoff bond: `16a@16d`

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

Table 12: Wyckoff bond: `48b@16d`

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

* Wyckoff site: `32e`, site symmetry: `.3.`

Table 13: Wyckoff bond: `32a@32e`

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

Table 14: Wyckoff bond: `96b@32e`

No.	vector	center	mapping
1	$[X, Y, Z]$	$[x, x, x]$	`[1]`

continued ...

Table 14

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

* Wyckoff site: 48f, site symmetry: 2..

Table 15: Wyckoff bond: 48a@48f

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

Table 16: Wyckoff bond: `48b@48f`

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

Table 17: Wyckoff bond: `96c@48f`

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

* Wyckoff site: `96g`, site symmetry: `1`

Table 18: Wyckoff bond: `96a@96g`

No.	vector	center	mapping
1	$[X,\ Y,\ Z]$	$[x,\ y,\ z]$	[1]
2	$[-X,\ -Y,\ Z]$	$\left[\frac{3}{4}-x,\ \frac{3}{4}-y,\ z\right]$	[2]
3	$[-X,\ Y,\ -Z]$	$\left[\frac{3}{4}-x,\ y,\ \frac{3}{4}-z\right]$	[3]
4	$[X,\ -Y,\ -Z]$	$\left[x,\ \frac{3}{4}-y,\ \frac{3}{4}-z\right]$	[4]
5	$[Z,\ X,\ Y]$	$[z,\ x,\ y]$	[5]
6	$[Z,\ -X,\ -Y]$	$\left[z,\ \frac{3}{4}-x,\ \frac{3}{4}-y\right]$	[6]
7	$[-Z,\ -X,\ Y]$	$\left[\frac{3}{4}-z,\ \frac{3}{4}-x,\ y\right]$	[7]
8	$[-Z,\ X,\ -Y]$	$\left[\frac{3}{4}-z,\ x,\ \frac{3}{4}-y\right]$	[8]
9	$[Y,\ Z,\ X]$	$[y,\ z,\ x]$	[9]
10	$[-Y,\ Z,\ -X]$	$\left[\frac{3}{4}-y,\ z,\ \frac{3}{4}-x\right]$	[10]
11	$[Y,\ -Z,\ -X]$	$\left[y,\ \frac{3}{4}-z,\ \frac{3}{4}-x\right]$	[11]
12	$[-Y,\ -Z,\ X]$	$\left[\frac{3}{4}-y,\ \frac{3}{4}-z,\ x\right]$	[12]
13	$[-X,\ -Y,\ -Z]$	$[-x,\ -y,\ -z]$	[13]
14	$[X,\ Y,\ -Z]$	$\left[x+\frac{1}{4},\ y+\frac{1}{4},\ -z\right]$	[14]
15	$[X,\ -Y,\ Z]$	$\left[x+\frac{1}{4},\ -y,\ z+\frac{1}{4}\right]$	[15]
16	$[-X,\ Y,\ Z]$	$\left[-x,\ y+\frac{1}{4},\ z+\frac{1}{4}\right]$	[16]
17	$[-Z,\ -X,\ -Y]$	$[-z,\ -x,\ -y]$	[17]
18	$[-Z,\ X,\ Y]$	$\left[-z,\ x+\frac{1}{4},\ y+\frac{1}{4}\right]$	[18]
19	$[Z,\ X,\ -Y]$	$\left[z+\frac{1}{4},\ x+\frac{1}{4},\ -y\right]$	[19]
20	$[Z,\ -X,\ Y]$	$\left[z+\frac{1}{4},\ -x,\ y+\frac{1}{4}\right]$	[20]
21	$[-Y,\ -Z,\ -X]$	$[-y,\ -z,\ -x]$	[21]
22	$[Y,\ -Z,\ X]$	$\left[y+\frac{1}{4},\ -z,\ x+\frac{1}{4}\right]$	[22]
23	$[-Y,\ Z,\ X]$	$\left[-y,\ z+\frac{1}{4},\ x+\frac{1}{4}\right]$	[23]
24	$[Y,\ Z,\ -X]$	$\left[y+\frac{1}{4},\ z+\frac{1}{4},\ -x\right]$	[24]