SG No. 183 C_{6v}^{1} $P6mm$ [hexagonal]

* plus set: $+[0, 0, 0]$
* Wyckoff site: `1a`, site symmetry: `6mm`

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

No.	vector	center	mapping
1	$[0, 0, Z]$	$[0, 0, z]$	`[1,2,3,4,5,6,7,8,9,10,11,12]`

Table 2: Wyckoff bond: `3b@1a`

No.	vector	center	mapping
1	$[X, 2X, 0]$	$[0, 0, z]$	`[1,-4,8,-11]`
2	$[-2X, -X, 0]$	$[0, 0, z]$	`[2,-5,7,-10]`
3	$[X, -X, 0]$	$[0, 0, z]$	`[3,-6,9,-12]`

Table 3: Wyckoff bond: `3c@1a`

No.	vector	center	mapping
1	$[X, 0, 0]$	$[0, 0, z]$	`[1,-4,-8,11]`
2	$[0, X, 0]$	$[0, 0, z]$	`[2,-5,-7,10]`
3	$[-X, -X, 0]$	$[0, 0, z]$	`[3,-6,-9,12]`

Table 4: Wyckoff bond: `6d@1a`

No.	vector	center	mapping
1	$[X, Y, 0]$	$[0, 0, z]$	`[1,-4]`
2	$[-Y, X-Y, 0]$	$[0, 0, z]$	`[2,-5]`
3	$[-X+Y, -X, 0]$	$[0, 0, z]$	`[3,-6]`
4	$[-Y, -X, 0]$	$[0, 0, z]$	`[7,-10]`
5	$[-X+Y, Y, 0]$	$[0, 0, z]$	`[8,-11]`
6	$[X, X-Y, 0]$	$[0, 0, z]$	`[9,-12]`

Table 5: Wyckoff bond: `6e@1a`

No.	vector	center	mapping
1	$[X, 2X, Z]$	$[0, 0, z]$	`[1,8]`
2	$[-2X, -X, Z]$	$[0, 0, z]$	`[2,7]`
3	$[X, -X, Z]$	$[0, 0, z]$	`[3,9]`

continued ...

Table 5

No.	vector	center	mapping
4	$[-X, -2X, Z]$	$[0, 0, z]$	`[4,11]`
5	$[2X, X, Z]$	$[0, 0, z]$	`[5,10]`
6	$[-X, X, Z]$	$[0, 0, z]$	`[6,12]`

Table 6: Wyckoff bond: `6f@1a`

No.	vector	center	mapping
1	$[X, 0, Z]$	$[0, 0, z]$	`[1,11]`
2	$[0, X, Z]$	$[0, 0, z]$	`[2,10]`
3	$[-X, -X, Z]$	$[0, 0, z]$	`[3,12]`
4	$[-X, 0, Z]$	$[0, 0, z]$	`[4,8]`
5	$[0, -X, Z]$	$[0, 0, z]$	`[5,7]`
6	$[X, X, Z]$	$[0, 0, z]$	`[6,9]`

Table 7: Wyckoff bond: `12g@1a`

No.	vector	center	mapping
1	$[X, Y, Z]$	$[0, 0, z]$	`[1]`
2	$[-Y, X-Y, Z]$	$[0, 0, z]$	`[2]`
3	$[-X+Y, -X, Z]$	$[0, 0, z]$	`[3]`
4	$[-X, -Y, Z]$	$[0, 0, z]$	`[4]`
5	$[Y, -X+Y, Z]$	$[0, 0, z]$	`[5]`
6	$[X-Y, X, Z]$	$[0, 0, z]$	`[6]`
7	$[-Y, -X, Z]$	$[0, 0, z]$	`[7]`
8	$[-X+Y, Y, Z]$	$[0, 0, z]$	`[8]`
9	$[X, X-Y, Z]$	$[0, 0, z]$	`[9]`
10	$[Y, X, Z]$	$[0, 0, z]$	`[10]`
11	$[X-Y, -Y, Z]$	$[0, 0, z]$	`[11]`
12	$[-X, -X+Y, Z]$	$[0, 0, z]$	`[12]`

* Wyckoff site: `2b`, site symmetry: `3m.`

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

No.	vector	center	mapping
1	$[0, 0, Z]$	$\left[\frac{1}{3}, \frac{2}{3}, z\right]$	`[1,2,3,7,8,9]`
2	$[0, 0, Z]$	$\left[\frac{2}{3}, \frac{1}{3}, z\right]$	`[4,5,6,10,11,12]`

Table 9: Wyckoff bond: `6b@2b`

No.	vector	center	mapping
1	$[X, 2X, Z]$	$\left[\frac{1}{3}, \frac{2}{3}, z\right]$	`[1,8]`
2	$[-2X, -X, Z]$	$\left[\frac{1}{3}, \frac{2}{3}, z\right]$	`[2,7]`
3	$[X, -X, Z]$	$\left[\frac{1}{3}, \frac{2}{3}, z\right]$	`[3,9]`
4	$[-X, -2X, Z]$	$\left[\frac{2}{3}, \frac{1}{3}, z\right]$	`[4,11]`
5	$[2X, X, Z]$	$\left[\frac{2}{3}, \frac{1}{3}, z\right]$	`[5,10]`
6	$[-X, X, Z]$	$\left[\frac{2}{3}, \frac{1}{3}, z\right]$	`[6,12]`

Table 10: Wyckoff bond: `6c@2b`

No.	vector	center	mapping
1	$[X, 0, 0]$	$\left[\frac{1}{3}, \frac{2}{3}, z\right]$	`[1,-8]`
2	$[0, X, 0]$	$\left[\frac{1}{3}, \frac{2}{3}, z\right]$	`[2,-7]`
3	$[-X, -X, 0]$	$\left[\frac{1}{3}, \frac{2}{3}, z\right]$	`[3,-9]`
4	$[-X, 0, 0]$	$\left[\frac{2}{3}, \frac{1}{3}, z\right]$	`[4,-11]`
5	$[0, -X, 0]$	$\left[\frac{2}{3}, \frac{1}{3}, z\right]$	`[5,-10]`
6	$[X, X, 0]$	$\left[\frac{2}{3}, \frac{1}{3}, z\right]$	`[6,-12]`

Table 11: Wyckoff bond: `12d@2b`

No.	vector	center	mapping
1	$[X, Y, Z]$	$\left[\frac{1}{3}, \frac{2}{3}, z\right]$	`[1]`
2	$[-Y, X-Y, Z]$	$\left[\frac{1}{3}, \frac{2}{3}, z\right]$	`[2]`
3	$[-X+Y, -X, Z]$	$\left[\frac{1}{3}, \frac{2}{3}, z\right]$	`[3]`
4	$[-X, -Y, Z]$	$\left[\frac{2}{3}, \frac{1}{3}, z\right]$	`[4]`
5	$[Y, -X+Y, Z]$	$\left[\frac{2}{3}, \frac{1}{3}, z\right]$	`[5]`
6	$[X-Y, X, Z]$	$\left[\frac{2}{3}, \frac{1}{3}, z\right]$	`[6]`
7	$[-Y, -X, Z]$	$\left[\frac{1}{3}, \frac{2}{3}, z\right]$	`[7]`
8	$[-X+Y, Y, Z]$	$\left[\frac{1}{3}, \frac{2}{3}, z\right]$	`[8]`
9	$[X, X-Y, Z]$	$\left[\frac{1}{3}, \frac{2}{3}, z\right]$	`[9]`
10	$[Y, X, Z]$	$\left[\frac{2}{3}, \frac{1}{3}, z\right]$	`[10]`
11	$[X-Y, -Y, Z]$	$\left[\frac{2}{3}, \frac{1}{3}, z\right]$	`[11]`
12	$[-X, -X+Y, Z]$	$\left[\frac{2}{3}, \frac{1}{3}, z\right]$	`[12]`

* Wyckoff site: `3c`, site symmetry: `2mm`

Table 12: Wyckoff bond: `3a@3c`

No.	vector	center	mapping
1	$[X, 2X, 0]$	$\left[\frac{1}{2}, 0, z\right]$	`[1,-4,8,-11]`

continued ...

Table 12

No.	vector	center	mapping
2	$[-2X, -X, 0]$	$\left[0, \frac{1}{2}, z\right]$	`[2,-5,7,-10]`
3	$[X, -X, 0]$	$\left[\frac{1}{2}, \frac{1}{2}, z\right]$	`[3,-6,9,-12]`

Table 13: Wyckoff bond: `3b@3c`

No.	vector	center	mapping
1	$[X, 0, 0]$	$\left[\frac{1}{2}, 0, z\right]$	`[1,-4,-8,11]`
2	$[0, X, 0]$	$\left[0, \frac{1}{2}, z\right]$	`[2,-5,-7,10]`
3	$[-X, -X, 0]$	$\left[\frac{1}{2}, \frac{1}{2}, z\right]$	`[3,-6,-9,12]`

Table 14: Wyckoff bond: `3c@3c`

No.	vector	center	mapping
1	$[0, 0, Z]$	$\left[\frac{1}{2}, 0, z\right]$	`[1,4,8,11]`
2	$[0, 0, Z]$	$\left[0, \frac{1}{2}, z\right]$	`[2,5,7,10]`
3	$[0, 0, Z]$	$\left[\frac{1}{2}, \frac{1}{2}, z\right]$	`[3,6,9,12]`

Table 15: Wyckoff bond: `6d@3c`

No.	vector	center	mapping
1	$[X, Y, 0]$	$\left[\frac{1}{2}, 0, z\right]$	`[1,-4]`
2	$[-Y, X-Y, 0]$	$\left[0, \frac{1}{2}, z\right]$	`[2,-5]`
3	$[-X+Y, -X, 0]$	$\left[\frac{1}{2}, \frac{1}{2}, z\right]$	`[3,-6]`
4	$[-Y, -X, 0]$	$\left[0, \frac{1}{2}, z\right]$	`[7,-10]`
5	$[-X+Y, Y, 0]$	$\left[\frac{1}{2}, 0, z\right]$	`[8,-11]`
6	$[X, X-Y, 0]$	$\left[\frac{1}{2}, \frac{1}{2}, z\right]$	`[9,-12]`

Table 16: Wyckoff bond: `6e@3c`

No.	vector	center	mapping
1	$[X, 2X, Z]$	$\left[\frac{1}{2}, 0, z\right]$	`[1,8]`
2	$[-2X, -X, Z]$	$\left[0, \frac{1}{2}, z\right]$	`[2,7]`
3	$[X, -X, Z]$	$\left[\frac{1}{2}, \frac{1}{2}, z\right]$	`[3,9]`
4	$[-X, -2X, Z]$	$\left[\frac{1}{2}, 0, z\right]$	`[4,11]`
5	$[2X, X, Z]$	$\left[0, \frac{1}{2}, z\right]$	`[5,10]`
6	$[-X, X, Z]$	$\left[\frac{1}{2}, \frac{1}{2}, z\right]$	`[6,12]`

Table 17: Wyckoff bond: `6f@3c`

No.	vector	center	mapping
1	$[X, 0, Z]$	$\left[\frac{1}{2}, 0, z\right]$	`[1,11]`
2	$[0, X, Z]$	$\left[0, \frac{1}{2}, z\right]$	`[2,10]`
3	$[-X, -X, Z]$	$\left[\frac{1}{2}, \frac{1}{2}, z\right]$	`[3,12]`
4	$[-X, 0, Z]$	$\left[\frac{1}{2}, 0, z\right]$	`[4,8]`
5	$[0, -X, Z]$	$\left[0, \frac{1}{2}, z\right]$	`[5,7]`
6	$[X, X, Z]$	$\left[\frac{1}{2}, \frac{1}{2}, z\right]$	`[6,9]`

Table 18: Wyckoff bond: `12g@3c`

No.	vector	center	mapping
1	$[X, Y, Z]$	$\left[\frac{1}{2}, 0, z\right]$	`[1]`
2	$[-Y, X-Y, Z]$	$\left[0, \frac{1}{2}, z\right]$	`[2]`
3	$[-X+Y, -X, Z]$	$\left[\frac{1}{2}, \frac{1}{2}, z\right]$	`[3]`
4	$[-X, -Y, Z]$	$\left[\frac{1}{2}, 0, z\right]$	`[4]`
5	$[Y, -X+Y, Z]$	$\left[0, \frac{1}{2}, z\right]$	`[5]`
6	$[X-Y, X, Z]$	$\left[\frac{1}{2}, \frac{1}{2}, z\right]$	`[6]`
7	$[-Y, -X, Z]$	$\left[0, \frac{1}{2}, z\right]$	`[7]`
8	$[-X+Y, Y, Z]$	$\left[\frac{1}{2}, 0, z\right]$	`[8]`
9	$[X, X-Y, Z]$	$\left[\frac{1}{2}, \frac{1}{2}, z\right]$	`[9]`
10	$[Y, X, Z]$	$\left[0, \frac{1}{2}, z\right]$	`[10]`
11	$[X-Y, -Y, Z]$	$\left[\frac{1}{2}, 0, z\right]$	`[11]`
12	$[-X, -X+Y, Z]$	$\left[\frac{1}{2}, \frac{1}{2}, z\right]$	`[12]`

* Wyckoff site: `6d`, site symmetry: `..m`

Table 19: Wyckoff bond: `6a@6d`

No.	vector	center	mapping
1	$[X, 0, Z]$	$[x, 0, z]$	`[1,11]`
2	$[0, X, Z]$	$[0, x, z]$	`[2,10]`
3	$[-X, -X, Z]$	$[-x, -x, z]$	`[3,12]`
4	$[-X, 0, Z]$	$[-x, 0, z]$	`[4,8]`
5	$[0, -X, Z]$	$[0, -x, z]$	`[5,7]`
6	$[X, X, Z]$	$[x, x, z]$	`[6,9]`

Table 20: Wyckoff bond: `6b@6d`

No.	vector	center	mapping
1	$[X, 2X, 0]$	$[x, 0, z]$	`[1,-11]`

continued ...

Table 20

No.	vector	center	mapping
2	$[-2X, -X, 0]$	$[0, x, z]$	`[2,-10]`
3	$[X, -X, 0]$	$[-x, -x, z]$	`[3,-12]`
4	$[-X, -2X, 0]$	$[-x, 0, z]$	`[4,-8]`
5	$[2X, X, 0]$	$[0, -x, z]$	`[5,-7]`
6	$[-X, X, 0]$	$[x, x, z]$	`[6,-9]`

Table 21: Wyckoff bond: `12c@6d`

No.	vector	center	mapping
1	$[X, Y, Z]$	$[x, 0, z]$	`[1]`
2	$[-Y, X-Y, Z]$	$[0, x, z]$	`[2]`
3	$[-X+Y, -X, Z]$	$[-x, -x, z]$	`[3]`
4	$[-X, -Y, Z]$	$[-x, 0, z]$	`[4]`
5	$[Y, -X+Y, Z]$	$[0, -x, z]$	`[5]`
6	$[X-Y, X, Z]$	$[x, x, z]$	`[6]`
7	$[-Y, -X, Z]$	$[0, -x, z]$	`[7]`
8	$[-X+Y, Y, Z]$	$[-x, 0, z]$	`[8]`
9	$[X, X-Y, Z]$	$[x, x, z]$	`[9]`
10	$[Y, X, Z]$	$[0, x, z]$	`[10]`
11	$[X-Y, -Y, Z]$	$[x, 0, z]$	`[11]`
12	$[-X, -X+Y, Z]$	$[-x, -x, z]$	`[12]`

* Wyckoff site: `6e`, site symmetry: `.m.`

Table 22: Wyckoff bond: `6a@6e`

No.	vector	center	mapping
1	$[X, -X, Z]$	$[x, -x, z]$	`[1,7]`
2	$[X, 2X, Z]$	$[x, 2x, z]$	`[2,9]`
3	$[-2X, -X, Z]$	$[-2x, -x, z]$	`[3,8]`
4	$[-X, X, Z]$	$[-x, x, z]$	`[4,10]`
5	$[-X, -2X, Z]$	$[-x, -2x, z]$	`[5,12]`
6	$[2X, X, Z]$	$[2x, x, z]$	`[6,11]`

Table 23: Wyckoff bond: `6b@6e`

No.	vector	center	mapping
1	$[X, X, 0]$	$[x, -x, z]$	`[1,-7]`
2	$[-X, 0, 0]$	$[x, 2x, z]$	`[2,-9]`
3	$[0, -X, 0]$	$[-2x, -x, z]$	`[3,-8]`

continued ...

Table 23

No.	vector	center	mapping
4	$[-X, -X, 0]$	$[-x, x, z]$	`[4,-10]`
5	$[X, 0, 0]$	$[-x, -2x, z]$	`[5,-12]`
6	$[0, X, 0]$	$[2x, x, z]$	`[6,-11]`

Table 24: Wyckoff bond: `12c@6e`

No.	vector	center	mapping
1	$[X, Y, Z]$	$[x, -x, z]$	`[1]`
2	$[-Y, X-Y, Z]$	$[x, 2x, z]$	`[2]`
3	$[-X+Y, -X, Z]$	$[-2x, -x, z]$	`[3]`
4	$[-X, -Y, Z]$	$[-x, x, z]$	`[4]`
5	$[Y, -X+Y, Z]$	$[-x, -2x, z]$	`[5]`
6	$[X-Y, X, Z]$	$[2x, x, z]$	`[6]`
7	$[-Y, -X, Z]$	$[x, -x, z]$	`[7]`
8	$[-X+Y, Y, Z]$	$[-2x, -x, z]$	`[8]`
9	$[X, X-Y, Z]$	$[x, 2x, z]$	`[9]`
10	$[Y, X, Z]$	$[-x, x, z]$	`[10]`
11	$[X-Y, -Y, Z]$	$[2x, x, z]$	`[11]`
12	$[-X, -X+Y, Z]$	$[-x, -2x, z]$	`[12]`

* Wyckoff site: `12f`, site symmetry: `1`

Table 25: Wyckoff bond: `12a@12f`

No.	vector	center	mapping
1	$[X, Y, Z]$	$[x, y, z]$	`[1]`
2	$[-Y, X-Y, Z]$	$[-y, x-y, z]$	`[2]`
3	$[-X+Y, -X, Z]$	$[-x+y, -x, z]$	`[3]`
4	$[-X, -Y, Z]$	$[-x, -y, z]$	`[4]`
5	$[Y, -X+Y, Z]$	$[y, -x+y, z]$	`[5]`
6	$[X-Y, X, Z]$	$[x-y, x, z]$	`[6]`
7	$[-Y, -X, Z]$	$[-y, -x, z]$	`[7]`
8	$[-X+Y, Y, Z]$	$[-x+y, y, z]$	`[8]`
9	$[X, X-Y, Z]$	$[x, x-y, z]$	`[9]`
10	$[Y, X, Z]$	$[y, x, z]$	`[10]`
11	$[X-Y, -Y, Z]$	$[x-y, -y, z]$	`[11]`
12	$[-X, -X+Y, Z]$	$[-x, -x+y, z]$	`[12]`