

# MSG No. 223.109 $P_I\bar{m}\bar{3}n$ [ Type IV, cubic ]

Table 1: Wyckoff site: 2a, site symmetry: m-3m'

No.	position	mapping
1	[0, 0, 0]	[1, 8, 9, 10, 17, 18, 19, 20, 21, 22, 23, 24, 25, 32, 33, 34, 41, 42, 43, 44, 45, 46, 47, 48, 50, 51, 52, 53, 54, 55, 59, 60, 61, 62, 63, 64, 74, 75, 76, 77, 78, 79, 83, 84, 85, 86, 87, 88]
2	[\frac{1}{2}, \frac{1}{2}, \frac{1}{2}]	[2, 3, 4, 5, 6, 7, 11, 12, 13, 14, 15, 16, 26, 27, 28, 29, 30, 31, 35, 36, 37, 38, 39, 40, 49, 56, 57, 58, 65, 66, 67, 68, 69, 70, 71, 72, 73, 80, 81, 82, 89, 90, 91, 92, 93, 94, 95, 96]

Table 2: Wyckoff site: 6b, site symmetry: 4'/mm.m'

No.	position	mapping
1	[0, \frac{1}{2}, \frac{1}{2}]	[1, 8, 9, 10, 25, 32, 33, 34, 50, 51, 61, 62, 74, 75, 85, 86]
2	[\frac{1}{2}, 0, 0]	[2, 3, 13, 14, 26, 27, 37, 38, 49, 56, 57, 58, 73, 80, 81, 82]
3	[0, 0, \frac{1}{2}]	[4, 5, 15, 16, 28, 29, 39, 40, 66, 67, 69, 71, 90, 91, 93, 95]
4	[0, \frac{1}{2}, 0]	[6, 7, 11, 12, 30, 31, 35, 36, 65, 68, 70, 72, 89, 92, 94, 96]
5	[\frac{1}{2}, 0, \frac{1}{2}]	[17, 20, 22, 24, 41, 44, 46, 48, 54, 55, 59, 60, 78, 79, 83, 84]
6	[\frac{1}{2}, \frac{1}{2}, 0]	[18, 19, 21, 23, 42, 43, 45, 47, 52, 53, 63, 64, 76, 77, 87, 88]

Table 3: Wyckoff site: 8c, site symmetry: .-3'm'

No.	position	mapping
1	[\frac{1}{4}, \frac{1}{4}, \frac{1}{4}]	[1, 12, 14, 16, 17, 18, 73, 84, 86, 88, 89, 90]
2	[\frac{3}{4}, \frac{1}{4}, \frac{3}{4}]	[2, 7, 9, 15, 19, 24, 74, 79, 81, 87, 91, 96]
3	[\frac{3}{4}, \frac{3}{4}, \frac{1}{4}]	[3, 4, 10, 11, 20, 21, 75, 76, 82, 83, 92, 93]
4	[\frac{1}{4}, \frac{3}{4}, \frac{3}{4}]	[5, 6, 8, 13, 22, 23, 77, 78, 80, 85, 94, 95]
5	[\frac{3}{4}, \frac{3}{4}, \frac{3}{4}]	[25, 36, 38, 40, 41, 42, 49, 60, 62, 64, 65, 66]
6	[\frac{1}{4}, \frac{3}{4}, \frac{1}{4}]	[26, 31, 33, 39, 43, 48, 50, 55, 57, 63, 67, 72]
7	[\frac{1}{4}, \frac{1}{4}, \frac{3}{4}]	[27, 28, 34, 35, 44, 45, 51, 52, 58, 59, 68, 69]
8	[\frac{3}{4}, \frac{1}{4}, \frac{1}{4}]	[29, 30, 32, 37, 46, 47, 53, 54, 56, 61, 70, 71]

Table 4: Wyckoff site: 12d, site symmetry: -4m.2

No.	position	mapping
1	[\frac{1}{4}, 0, \frac{1}{2}]	[1, 8, 13, 14, 26, 27, 33, 34]
2	[\frac{3}{4}, 0, \frac{1}{2}]	[2, 3, 9, 10, 25, 32, 37, 38]
3	[0, \frac{1}{2}, \frac{1}{4}]	[4, 16, 18, 21, 29, 39, 43, 47]
4	[0, \frac{1}{2}, \frac{3}{4}]	[5, 15, 19, 23, 28, 40, 42, 45]
5	[\frac{1}{2}, \frac{3}{4}, 0]	[6, 11, 20, 22, 31, 36, 41, 48]
6	[\frac{1}{2}, \frac{1}{4}, 0]	[7, 12, 17, 24, 30, 35, 44, 46]
7	[\frac{3}{4}, \frac{1}{2}, 0]	[49, 56, 61, 62, 74, 75, 81, 82]

*continued ...*

Table 4

No.	position	mapping
8	$[\frac{1}{4}, \frac{1}{2}, 0]$	[50, 51, 57, 58, 73, 80, 85, 86]
9	$[\frac{1}{2}, 0, \frac{3}{4}]$	[52, 64, 66, 69, 77, 87, 91, 95]
10	$[\frac{1}{2}, 0, \frac{1}{4}]$	[53, 63, 67, 71, 76, 88, 90, 93]
11	$[0, \frac{1}{4}, \frac{1}{2}]$	[54, 59, 68, 70, 79, 84, 89, 96]
12	$[0, \frac{3}{4}, \frac{1}{2}]$	[55, 60, 65, 72, 78, 83, 92, 94]

Table 5: Wyckoff site: 12e, site symmetry: 4'm.m'

No.	position	mapping
1	$[x, 0, 0]$	[1, 8, 33, 34, 50, 51, 85, 86]
2	$[x + \frac{1}{2}, \frac{1}{2}, \frac{1}{2}]$	[2, 3, 37, 38, 49, 56, 81, 82]
3	$[\frac{1}{2}, \frac{1}{2}, \frac{1}{2} - x]$	[4, 16, 29, 39, 67, 71, 90, 93]
4	$[\frac{1}{2}, \frac{1}{2}, x + \frac{1}{2}]$	[5, 15, 28, 40, 66, 69, 91, 95]
5	$[\frac{1}{2}, x + \frac{1}{2}, \frac{1}{2}]$	[6, 11, 31, 36, 65, 72, 92, 94]
6	$[\frac{1}{2}, \frac{1}{2} - x, \frac{1}{2}]$	[7, 12, 30, 35, 68, 70, 89, 96]
7	$[-x, 0, 0]$	[9, 10, 25, 32, 61, 62, 74, 75]
8	$[\frac{1}{2} - x, \frac{1}{2}, \frac{1}{2}]$	[13, 14, 26, 27, 57, 58, 73, 80]
9	$[0, x, 0]$	[17, 24, 44, 46, 54, 59, 79, 84]
10	$[0, 0, x]$	[18, 21, 43, 47, 53, 63, 76, 88]
11	$[0, 0, -x]$	[19, 23, 42, 45, 52, 64, 77, 87]
12	$[0, -x, 0]$	[20, 22, 41, 48, 55, 60, 78, 83]

Table 6: Wyckoff site: 16f, site symmetry: .3m'

No.	position	mapping
1	$[x, x, x]$	[1, 17, 18, 84, 86, 88]
2	$[x + \frac{1}{2}, \frac{1}{2} - x, x + \frac{1}{2}]$	[2, 7, 15, 81, 91, 96]
3	$[x + \frac{1}{2}, x + \frac{1}{2}, \frac{1}{2} - x]$	[3, 4, 11, 82, 92, 93]
4	$[\frac{1}{2} - x, x + \frac{1}{2}, x + \frac{1}{2}]$	[5, 6, 13, 80, 94, 95]
5	$[x, -x, -x]$	[8, 22, 23, 77, 78, 85]
6	$[-x, x, -x]$	[9, 19, 24, 74, 79, 87]
7	$[-x, -x, x]$	[10, 20, 21, 75, 76, 83]
8	$[\frac{1}{2} - x, \frac{1}{2} - x, \frac{1}{2} - x]$	[12, 14, 16, 73, 89, 90]
9	$[-x, -x, -x]$	[25, 41, 42, 60, 62, 64]
10	$[\frac{1}{2} - x, x + \frac{1}{2}, \frac{1}{2} - x]$	[26, 31, 39, 57, 67, 72]
11	$[\frac{1}{2} - x, \frac{1}{2} - x, x + \frac{1}{2}]$	[27, 28, 35, 58, 68, 69]
12	$[x + \frac{1}{2}, \frac{1}{2} - x, \frac{1}{2} - x]$	[29, 30, 37, 56, 70, 71]
13	$[-x, x, x]$	[32, 46, 47, 53, 54, 61]
14	$[x, -x, x]$	[33, 43, 48, 50, 55, 63]
15	$[x, x, -x]$	[34, 44, 45, 51, 52, 59]
16	$[x + \frac{1}{2}, x + \frac{1}{2}, x + \frac{1}{2}]$	[36, 38, 40, 49, 65, 66]

Table 7: Wyckoff site: 24g, site symmetry: 2mm..

No.	position	mapping
1	$[x, 0, \frac{1}{2}]$	[1,8,33,34]
2	$[x + \frac{1}{2}, 0, \frac{1}{2}]$	[2,3,37,38]
3	$[0, \frac{1}{2}, \frac{1}{2} - x]$	[4,16,29,39]
4	$[0, \frac{1}{2}, x + \frac{1}{2}]$	[5,15,28,40]
5	$[\frac{1}{2}, x + \frac{1}{2}, 0]$	[6,11,31,36]
6	$[\frac{1}{2}, \frac{1}{2} - x, 0]$	[7,12,30,35]
7	$[-x, 0, \frac{1}{2}]$	[9,10,25,32]
8	$[\frac{1}{2} - x, 0, \frac{1}{2}]$	[13,14,26,27]
9	$[\frac{1}{2}, x, 0]$	[17,24,44,46]
10	$[0, \frac{1}{2}, x]$	[18,21,43,47]
11	$[0, \frac{1}{2}, -x]$	[19,23,42,45]
12	$[\frac{1}{2}, -x, 0]$	[20,22,41,48]
13	$[x + \frac{1}{2}, \frac{1}{2}, 0]$	[49,56,81,82]
14	$[x, \frac{1}{2}, 0]$	[50,51,85,86]
15	$[\frac{1}{2}, 0, -x]$	[52,64,77,87]
16	$[\frac{1}{2}, 0, x]$	[53,63,76,88]
17	$[0, x, \frac{1}{2}]$	[54,59,79,84]
18	$[0, -x, \frac{1}{2}]$	[55,60,78,83]
19	$[\frac{1}{2} - x, \frac{1}{2}, 0]$	[57,58,73,80]
20	$[-x, \frac{1}{2}, 0]$	[61,62,74,75]
21	$[0, x + \frac{1}{2}, \frac{1}{2}]$	[65,72,92,94]
22	$[\frac{1}{2}, 0, x + \frac{1}{2}]$	[66,69,91,95]
23	$[\frac{1}{2}, 0, \frac{1}{2} - x]$	[67,71,90,93]
24	$[0, \frac{1}{2} - x, \frac{1}{2}]$	[68,70,89,96]

Table 8: Wyckoff site: 24h, site symmetry: m.2'm'

No.	position	mapping
1	$[0, y, y]$	[1,32,61,86]
2	$[\frac{1}{2}, \frac{1}{2} - y, y + \frac{1}{2}]$	[2,27,58,81]
3	$[\frac{1}{2}, y + \frac{1}{2}, \frac{1}{2} - y]$	[3,26,57,82]
4	$[y + \frac{1}{2}, y + \frac{1}{2}, \frac{1}{2}]$	[4,40,66,93]
5	$[\frac{1}{2} - y, y + \frac{1}{2}, \frac{1}{2}]$	[5,39,67,95]
6	$[\frac{1}{2} - y, \frac{1}{2}, y + \frac{1}{2}]$	[6,35,68,94]
7	$[y + \frac{1}{2}, \frac{1}{2}, y + \frac{1}{2}]$	[7,36,65,96]
8	$[0, -y, -y]$	[8,25,62,85]
9	$[0, y, -y]$	[9,34,51,74]
10	$[0, -y, y]$	[10,33,50,75]
11	$[y + \frac{1}{2}, \frac{1}{2}, \frac{1}{2} - y]$	[11,30,70,92]
12	$[\frac{1}{2} - y, \frac{1}{2}, \frac{1}{2} - y]$	[12,31,72,89]
13	$[\frac{1}{2}, y + \frac{1}{2}, y + \frac{1}{2}]$	[13,38,49,80]
14	$[\frac{1}{2}, \frac{1}{2} - y, \frac{1}{2} - y]$	[14,37,56,73]
15	$[y + \frac{1}{2}, \frac{1}{2} - y, \frac{1}{2}]$	[15,29,71,91]

continued ...

Table 8

No.	position	mapping
16	$[\frac{1}{2} - y, \frac{1}{2} - y, \frac{1}{2}]$	[16,28,69,90]
17	$[y, 0, y]$	[17,48,55,84]
18	$[y, y, 0]$	[18,45,52,88]
19	$[-y, y, 0]$	[19,47,53,87]
20	$[-y, 0, y]$	[20,46,54,83]
21	$[-y, -y, 0]$	[21,42,64,76]
22	$[y, 0, -y]$	[22,44,59,78]
23	$[y, -y, 0]$	[23,43,63,77]
24	$[-y, 0, -y]$	[24,41,60,79]

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

No.	position	mapping
1	$[\frac{1}{4}, y, \frac{1}{2} - y]$	[1,14]
2	$[\frac{3}{4}, y, y + \frac{1}{2}]$	[2,9]
3	$[\frac{3}{4}, -y, \frac{1}{2} - y]$	[3,10]
4	$[-y, y + \frac{1}{2}, \frac{1}{4}]$	[4,21]
5	$[y, y + \frac{1}{2}, \frac{3}{4}]$	[5,23]
6	$[\frac{1}{2} - y, \frac{3}{4}, -y]$	[6,22]
7	$[y + \frac{1}{2}, \frac{1}{4}, -y]$	[7,24]
8	$[\frac{1}{4}, -y, y + \frac{1}{2}]$	[8,13]
9	$[y + \frac{1}{2}, \frac{3}{4}, y]$	[11,20]
10	$[\frac{1}{2} - y, \frac{1}{4}, y]$	[12,17]
11	$[-y, \frac{1}{2} - y, \frac{3}{4}]$	[15,19]
12	$[y, \frac{1}{2} - y, \frac{1}{4}]$	[16,18]
13	$[\frac{3}{4}, -y, y + \frac{1}{2}]$	[25,38]
14	$[\frac{1}{4}, -y, \frac{1}{2} - y]$	[26,33]
15	$[\frac{1}{4}, y, y + \frac{1}{2}]$	[27,34]
16	$[y, \frac{1}{2} - y, \frac{3}{4}]$	[28,45]
17	$[-y, \frac{1}{2} - y, \frac{1}{4}]$	[29,47]
18	$[y + \frac{1}{2}, \frac{1}{4}, y]$	[30,46]
19	$[\frac{1}{2} - y, \frac{3}{4}, y]$	[31,48]
20	$[\frac{3}{4}, y, \frac{1}{2} - y]$	[32,37]
21	$[\frac{1}{2} - y, \frac{1}{4}, -y]$	[35,44]
22	$[y + \frac{1}{2}, \frac{3}{4}, -y]$	[36,41]
23	$[y, y + \frac{1}{2}, \frac{1}{4}]$	[39,43]
24	$[-y, y + \frac{1}{2}, \frac{3}{4}]$	[40,42]
25	$[\frac{3}{4}, y + \frac{1}{2}, -y]$	[49,62]
26	$[\frac{1}{4}, y + \frac{1}{2}, y]$	[50,57]
27	$[\frac{1}{4}, \frac{1}{2} - y, -y]$	[51,58]
28	$[\frac{1}{2} - y, y, \frac{3}{4}]$	[52,69]
29	$[y + \frac{1}{2}, y, \frac{1}{4}]$	[53,71]
30	$[-y, \frac{1}{4}, \frac{1}{2} - y]$	[54,70]
31	$[y, \frac{3}{4}, \frac{1}{2} - y]$	[55,72]

*continued ...*

Table 9

No.	position	mapping
32	$[\frac{3}{4}, \frac{1}{2} - y, y]$	[56,61]
33	$[y, \frac{1}{4}, y + \frac{1}{2}]$	[59,68]
34	$[-y, \frac{3}{4}, y + \frac{1}{2}]$	[60,65]
35	$[\frac{1}{2} - y, -y, \frac{1}{4}]$	[63,67]
36	$[y + \frac{1}{2}, -y, \frac{3}{4}]$	[64,66]
37	$[\frac{1}{4}, \frac{1}{2} - y, y]$	[73,86]
38	$[\frac{3}{4}, \frac{1}{2} - y, -y]$	[74,81]
39	$[\frac{3}{4}, y + \frac{1}{2}, y]$	[75,82]
40	$[y + \frac{1}{2}, -y, \frac{1}{4}]$	[76,93]
41	$[\frac{1}{2} - y, -y, \frac{3}{4}]$	[77,95]
42	$[y, \frac{3}{4}, y + \frac{1}{2}]$	[78,94]
43	$[-y, \frac{1}{4}, y + \frac{1}{2}]$	[79,96]
44	$[\frac{1}{4}, y + \frac{1}{2}, -y]$	[80,85]
45	$[-y, \frac{3}{4}, \frac{1}{2} - y]$	[83,92]
46	$[y, \frac{1}{4}, \frac{1}{2} - y]$	[84,89]
47	$[y + \frac{1}{2}, y, \frac{3}{4}]$	[87,91]
48	$[\frac{1}{2} - y, y, \frac{1}{4}]$	[88,90]

Table 10: Wyckoff site: 48j, site symmetry: m..

No.	position	mapping
1	$[0, y, z]$	[1,32]
2	$[\frac{1}{2}, \frac{1}{2} - z, y + \frac{1}{2}]$	[2,27]
3	$[\frac{1}{2}, z + \frac{1}{2}, \frac{1}{2} - y]$	[3,26]
4	$[z + \frac{1}{2}, y + \frac{1}{2}, \frac{1}{2}]$	[4,40]
5	$[\frac{1}{2} - z, y + \frac{1}{2}, \frac{1}{2}]$	[5,39]
6	$[\frac{1}{2} - y, \frac{1}{2}, z + \frac{1}{2}]$	[6,35]
7	$[y + \frac{1}{2}, \frac{1}{2}, z + \frac{1}{2}]$	[7,36]
8	$[0, -y, -z]$	[8,25]
9	$[0, y, -z]$	[9,34]
10	$[0, -y, z]$	[10,33]
11	$[y + \frac{1}{2}, \frac{1}{2}, \frac{1}{2} - z]$	[11,30]
12	$[\frac{1}{2} - y, \frac{1}{2}, \frac{1}{2} - z]$	[12,31]
13	$[\frac{1}{2}, z + \frac{1}{2}, y + \frac{1}{2}]$	[13,38]
14	$[\frac{1}{2}, \frac{1}{2} - z, \frac{1}{2} - y]$	[14,37]
15	$[z + \frac{1}{2}, \frac{1}{2} - y, \frac{1}{2}]$	[15,29]
16	$[\frac{1}{2} - z, \frac{1}{2} - y, \frac{1}{2}]$	[16,28]
17	$[z, 0, y]$	[17,48]
18	$[y, z, 0]$	[18,45]
19	$[-y, z, 0]$	[19,47]
20	$[-z, 0, y]$	[20,46]
21	$[-y, -z, 0]$	[21,42]
22	$[z, 0, -y]$	[22,44]
23	$[y, -z, 0]$	[23,43]

continued ...

Table 10

No.	position	mapping
24	$[-z, 0, -y]$	[24,41]
25	$[\frac{1}{2}, y + \frac{1}{2}, z + \frac{1}{2}]$	[49,80]
26	$[0, -z, y]$	[50,75]
27	$[0, z, -y]$	[51,74]
28	$[z, y, 0]$	[52,88]
29	$[-z, y, 0]$	[53,87]
30	$[-y, 0, z]$	[54,83]
31	$[y, 0, z]$	[55,84]
32	$[\frac{1}{2}, \frac{1}{2} - y, \frac{1}{2} - z]$	[56,73]
33	$[\frac{1}{2}, y + \frac{1}{2}, \frac{1}{2} - z]$	[57,82]
34	$[\frac{1}{2}, \frac{1}{2} - y, z + \frac{1}{2}]$	[58,81]
35	$[y, 0, -z]$	[59,78]
36	$[-y, 0, -z]$	[60,79]
37	$[0, z, y]$	[61,86]
38	$[0, -z, -y]$	[62,85]
39	$[z, -y, 0]$	[63,77]
40	$[-z, -y, 0]$	[64,76]
41	$[z + \frac{1}{2}, \frac{1}{2}, y + \frac{1}{2}]$	[65,96]
42	$[y + \frac{1}{2}, z + \frac{1}{2}, \frac{1}{2}]$	[66,93]
43	$[\frac{1}{2} - y, z + \frac{1}{2}, \frac{1}{2}]$	[67,95]
44	$[\frac{1}{2} - z, \frac{1}{2}, y + \frac{1}{2}]$	[68,94]
45	$[\frac{1}{2} - y, \frac{1}{2} - z, \frac{1}{2}]$	[69,90]
46	$[z + \frac{1}{2}, \frac{1}{2}, \frac{1}{2} - y]$	[70,92]
47	$[y + \frac{1}{2}, \frac{1}{2} - z, \frac{1}{2}]$	[71,91]
48	$[\frac{1}{2} - z, \frac{1}{2}, \frac{1}{2} - y]$	[72,89]

Table 11: Wyckoff site: 48k, site symmetry: . . m'

No.	position	mapping
1	$[x, x, z]$	[1,84]
2	$[x + \frac{1}{2}, \frac{1}{2} - z, x + \frac{1}{2}]$	[2,91]
3	$[x + \frac{1}{2}, z + \frac{1}{2}, \frac{1}{2} - x]$	[3,93]
4	$[z + \frac{1}{2}, x + \frac{1}{2}, \frac{1}{2} - x]$	[4,92]
5	$[\frac{1}{2} - z, x + \frac{1}{2}, x + \frac{1}{2}]$	[5,94]
6	$[\frac{1}{2} - x, x + \frac{1}{2}, z + \frac{1}{2}]$	[6,80]
7	$[x + \frac{1}{2}, \frac{1}{2} - x, z + \frac{1}{2}]$	[7,81]
8	$[x, -x, -z]$	[8,78]
9	$[-x, x, -z]$	[9,79]
10	$[-x, -x, z]$	[10,83]
11	$[x + \frac{1}{2}, x + \frac{1}{2}, \frac{1}{2} - z]$	[11,82]
12	$[\frac{1}{2} - x, \frac{1}{2} - x, \frac{1}{2} - z]$	[12,73]
13	$[\frac{1}{2} - x, z + \frac{1}{2}, x + \frac{1}{2}]$	[13,95]
14	$[\frac{1}{2} - x, \frac{1}{2} - z, \frac{1}{2} - x]$	[14,90]
15	$[z + \frac{1}{2}, \frac{1}{2} - x, x + \frac{1}{2}]$	[15,96]

continued ...

Table 11

No.	position	mapping
16	$[\frac{1}{2} - z, \frac{1}{2} - x, \frac{1}{2} - x]$	[16,89]
17	$[z, x, x]$	[17,88]
18	$[x, z, x]$	[18,86]
19	$[-x, z, -x]$	[19,74]
20	$[-z, -x, x]$	[20,76]
21	$[-x, -z, x]$	[21,75]
22	$[z, -x, -x]$	[22,77]
23	$[x, -z, -x]$	[23,85]
24	$[-z, x, -x]$	[24,87]
25	$[-x, -x, -z]$	[25,60]
26	$[\frac{1}{2} - x, z + \frac{1}{2}, \frac{1}{2} - x]$	[26,67]
27	$[\frac{1}{2} - x, \frac{1}{2} - z, x + \frac{1}{2}]$	[27,69]
28	$[\frac{1}{2} - z, \frac{1}{2} - x, x + \frac{1}{2}]$	[28,68]
29	$[z + \frac{1}{2}, \frac{1}{2} - x, \frac{1}{2} - x]$	[29,70]
30	$[x + \frac{1}{2}, \frac{1}{2} - x, \frac{1}{2} - z]$	[30,56]
31	$[\frac{1}{2} - x, x + \frac{1}{2}, \frac{1}{2} - z]$	[31,57]
32	$[-x, x, z]$	[32,54]
33	$[x, -x, z]$	[33,55]
34	$[x, x, -z]$	[34,59]
35	$[\frac{1}{2} - x, \frac{1}{2} - x, z + \frac{1}{2}]$	[35,58]
36	$[x + \frac{1}{2}, x + \frac{1}{2}, z + \frac{1}{2}]$	[36,49]
37	$[x + \frac{1}{2}, \frac{1}{2} - z, \frac{1}{2} - x]$	[37,71]
38	$[x + \frac{1}{2}, z + \frac{1}{2}, x + \frac{1}{2}]$	[38,66]
39	$[\frac{1}{2} - z, x + \frac{1}{2}, \frac{1}{2} - x]$	[39,72]
40	$[z + \frac{1}{2}, x + \frac{1}{2}, x + \frac{1}{2}]$	[40,65]
41	$[-z, -x, -x]$	[41,64]
42	$[-x, -z, -x]$	[42,62]
43	$[x, -z, x]$	[43,50]
44	$[z, x, -x]$	[44,52]
45	$[x, z, -x]$	[45,51]
46	$[-z, x, x]$	[46,53]
47	$[-x, z, x]$	[47,61]
48	$[z, -x, x]$	[48,63]

Table 12: Wyckoff site: 961, site symmetry: 1

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

*continued ...*

Table 12

No.	position	mapping
8	$[x, -y, -z]$	[8]
9	$[-x, y, -z]$	[9]
10	$[-x, -y, z]$	[10]
11	$[y + \frac{1}{2}, x + \frac{1}{2}, \frac{1}{2} - z]$	[11]
12	$[\frac{1}{2} - y, \frac{1}{2} - x, \frac{1}{2} - z]$	[12]
13	$[\frac{1}{2} - x, z + \frac{1}{2}, y + \frac{1}{2}]$	[13]
14	$[\frac{1}{2} - x, \frac{1}{2} - z, \frac{1}{2} - y]$	[14]
15	$[z + \frac{1}{2}, \frac{1}{2} - y, x + \frac{1}{2}]$	[15]
16	$[\frac{1}{2} - z, \frac{1}{2} - y, \frac{1}{2} - x]$	[16]
17	$[z, x, y]$	[17]
18	$[y, z, x]$	[18]
19	$[-y, z, -x]$	[19]
20	$[-z, -x, y]$	[20]
21	$[-y, -z, x]$	[21]
22	$[z, -x, -y]$	[22]
23	$[y, -z, -x]$	[23]
24	$[-z, x, -y]$	[24]
25	$[-x, -y, -z]$	[25]
26	$[\frac{1}{2} - x, z + \frac{1}{2}, \frac{1}{2} - y]$	[26]
27	$[\frac{1}{2} - x, \frac{1}{2} - z, y + \frac{1}{2}]$	[27]
28	$[\frac{1}{2} - z, \frac{1}{2} - y, x + \frac{1}{2}]$	[28]
29	$[z + \frac{1}{2}, \frac{1}{2} - y, \frac{1}{2} - x]$	[29]
30	$[y + \frac{1}{2}, \frac{1}{2} - x, \frac{1}{2} - z]$	[30]
31	$[\frac{1}{2} - y, x + \frac{1}{2}, \frac{1}{2} - z]$	[31]
32	$[-x, y, z]$	[32]
33	$[x, -y, z]$	[33]
34	$[x, y, -z]$	[34]
35	$[\frac{1}{2} - y, \frac{1}{2} - x, z + \frac{1}{2}]$	[35]
36	$[y + \frac{1}{2}, x + \frac{1}{2}, z + \frac{1}{2}]$	[36]
37	$[x + \frac{1}{2}, \frac{1}{2} - z, \frac{1}{2} - y]$	[37]
38	$[x + \frac{1}{2}, z + \frac{1}{2}, y + \frac{1}{2}]$	[38]
39	$[\frac{1}{2} - z, y + \frac{1}{2}, \frac{1}{2} - x]$	[39]
40	$[z + \frac{1}{2}, y + \frac{1}{2}, x + \frac{1}{2}]$	[40]
41	$[-z, -x, -y]$	[41]
42	$[-y, -z, -x]$	[42]
43	$[y, -z, x]$	[43]
44	$[z, x, -y]$	[44]
45	$[y, z, -x]$	[45]
46	$[-z, x, y]$	[46]
47	$[-y, z, x]$	[47]
48	$[z, -x, y]$	[48]
49	$[x + \frac{1}{2}, y + \frac{1}{2}, z + \frac{1}{2}]$	[49]
50	$[x, -z, y]$	[50]
51	$[x, z, -y]$	[51]
52	$[z, y, -x]$	[52]
53	$[-z, y, x]$	[53]
54	$[-y, x, z]$	[54]

*continued ...*

Table 12

No.	position	mapping
55	$[y, -x, z]$	[55]
56	$[x + \frac{1}{2}, \frac{1}{2} - y, \frac{1}{2} - z]$	[56]
57	$[\frac{1}{2} - x, y + \frac{1}{2}, \frac{1}{2} - z]$	[57]
58	$[\frac{1}{2} - x, \frac{1}{2} - y, z + \frac{1}{2}]$	[58]
59	$[y, x, -z]$	[59]
60	$[-y, -x, -z]$	[60]
61	$[-x, z, y]$	[61]
62	$[-x, -z, -y]$	[62]
63	$[z, -y, x]$	[63]
64	$[-z, -y, -x]$	[64]
65	$[z + \frac{1}{2}, x + \frac{1}{2}, y + \frac{1}{2}]$	[65]
66	$[y + \frac{1}{2}, z + \frac{1}{2}, x + \frac{1}{2}]$	[66]
67	$[\frac{1}{2} - y, z + \frac{1}{2}, \frac{1}{2} - x]$	[67]
68	$[\frac{1}{2} - z, \frac{1}{2} - x, y + \frac{1}{2}]$	[68]
69	$[\frac{1}{2} - y, \frac{1}{2} - z, x + \frac{1}{2}]$	[69]
70	$[z + \frac{1}{2}, \frac{1}{2} - x, \frac{1}{2} - y]$	[70]
71	$[y + \frac{1}{2}, \frac{1}{2} - z, \frac{1}{2} - x]$	[71]
72	$[\frac{1}{2} - z, x + \frac{1}{2}, \frac{1}{2} - y]$	[72]
73	$[\frac{1}{2} - x, \frac{1}{2} - y, \frac{1}{2} - z]$	[73]
74	$[-x, z, -y]$	[74]
75	$[-x, -z, y]$	[75]
76	$[-z, -y, x]$	[76]
77	$[z, -y, -x]$	[77]
78	$[y, -x, -z]$	[78]
79	$[-y, x, -z]$	[79]
80	$[\frac{1}{2} - x, y + \frac{1}{2}, z + \frac{1}{2}]$	[80]
81	$[x + \frac{1}{2}, \frac{1}{2} - y, z + \frac{1}{2}]$	[81]
82	$[x + \frac{1}{2}, y + \frac{1}{2}, \frac{1}{2} - z]$	[82]
83	$[-y, -x, z]$	[83]
84	$[y, x, z]$	[84]
85	$[x, -z, -y]$	[85]
86	$[x, z, y]$	[86]
87	$[-z, y, -x]$	[87]
88	$[z, y, x]$	[88]
89	$[\frac{1}{2} - z, \frac{1}{2} - x, \frac{1}{2} - y]$	[89]
90	$[\frac{1}{2} - y, \frac{1}{2} - z, \frac{1}{2} - x]$	[90]
91	$[y + \frac{1}{2}, \frac{1}{2} - z, x + \frac{1}{2}]$	[91]
92	$[z + \frac{1}{2}, x + \frac{1}{2}, \frac{1}{2} - y]$	[92]
93	$[y + \frac{1}{2}, z + \frac{1}{2}, \frac{1}{2} - x]$	[93]
94	$[\frac{1}{2} - z, x + \frac{1}{2}, y + \frac{1}{2}]$	[94]
95	$[\frac{1}{2} - y, z + \frac{1}{2}, x + \frac{1}{2}]$	[95]
96	$[z + \frac{1}{2}, \frac{1}{2} - x, y + \frac{1}{2}]$	[96]