

MSG No. 163.81  $P\bar{3}'1c$  [ Type III, trigonal ]

Table 1: Wyckoff site: 2a, site symmetry:  $3.2'$

No.	position	mapping
1	$[0, 0, \frac{1}{4}]$	$[1, 2, 3, 7, 8, 9]$
2	$[0, 0, \frac{3}{4}]$	$[4, 5, 6, 10, 11, 12]$

Table 2: Wyckoff site: 2b, site symmetry:  $-3'..$

No.	position	mapping
1	$[0, 0, 0]$	$[1, 2, 3, 10, 11, 12]$
2	$[0, 0, \frac{1}{2}]$	$[4, 5, 6, 7, 8, 9]$

Table 3: Wyckoff site: 2c, site symmetry:  $3.2'$

No.	position	mapping
1	$[\frac{1}{3}, \frac{2}{3}, \frac{1}{4}]$	$[1, 2, 3, 7, 8, 9]$
2	$[\frac{2}{3}, \frac{1}{3}, \frac{3}{4}]$	$[4, 5, 6, 10, 11, 12]$

Table 4: Wyckoff site: 2d, site symmetry:  $3.2'$

No.	position	mapping
1	$[\frac{2}{3}, \frac{1}{3}, \frac{1}{4}]$	$[1, 2, 3, 7, 8, 9]$
2	$[\frac{1}{3}, \frac{2}{3}, \frac{3}{4}]$	$[4, 5, 6, 10, 11, 12]$

Table 5: Wyckoff site: 4e, site symmetry:  $3..$

No.	position	mapping
1	$[0, 0, z]$	$[1, 2, 3]$
2	$[0, 0, z + \frac{1}{2}]$	$[4, 5, 6]$
3	$[0, 0, \frac{1}{2} - z]$	$[7, 8, 9]$
4	$[0, 0, -z]$	$[10, 11, 12]$

Table 6: Wyckoff site: **4f**, site symmetry:  $3..$ 

No.	position	mapping
1	$[\frac{1}{3}, \frac{2}{3}, z]$	$[1, 2, 3]$
2	$[\frac{2}{3}, \frac{1}{3}, z + \frac{1}{2}]$	$[4, 5, 6]$
3	$[\frac{1}{3}, \frac{2}{3}, \frac{1}{2} - z]$	$[7, 8, 9]$
4	$[\frac{2}{3}, \frac{1}{3}, -z]$	$[10, 11, 12]$

Table 7: Wyckoff site: **6g**, site symmetry:  $-1'$ 

No.	position	mapping
1	$[\frac{1}{2}, 0, 0]$	$[1, 10]$
2	$[0, \frac{1}{2}, 0]$	$[2, 11]$
3	$[\frac{1}{2}, \frac{1}{2}, 0]$	$[3, 12]$
4	$[\frac{1}{2}, \frac{1}{2}, \frac{1}{2}]$	$[4, 7]$
5	$[\frac{1}{2}, 0, \frac{1}{2}]$	$[5, 8]$
6	$[0, \frac{1}{2}, \frac{1}{2}]$	$[6, 9]$

Table 8: Wyckoff site: **6h**, site symmetry:  $..2'$ 

No.	position	mapping
1	$[x, -x, \frac{1}{4}]$	$[1, 9]$
2	$[x, 2x, \frac{1}{4}]$	$[2, 7]$
3	$[-2x, -x, \frac{1}{4}]$	$[3, 8]$
4	$[-x, -2x, \frac{3}{4}]$	$[4, 11]$
5	$[2x, x, \frac{3}{4}]$	$[5, 12]$
6	$[-x, x, \frac{3}{4}]$	$[6, 10]$

Table 9: Wyckoff site: **12i**, site symmetry:  $1$ 

No.	position	mapping
1	$[x, y, z]$	$[1]$
2	$[-y, x - y, z]$	$[2]$
3	$[-x + y, -x, z]$	$[3]$
4	$[-x, -x + y, z + \frac{1}{2}]$	$[4]$
5	$[x - y, -y, z + \frac{1}{2}]$	$[5]$
6	$[y, x, z + \frac{1}{2}]$	$[6]$
7	$[x, x - y, \frac{1}{2} - z]$	$[7]$
8	$[-x + y, y, \frac{1}{2} - z]$	$[8]$
9	$[-y, -x, \frac{1}{2} - z]$	$[9]$
10	$[-x, -y, -z]$	$[10]$
11	$[y, -x + y, -z]$	$[11]$

*continued ...*

Table 9

No.	position	mapping
12	$[x - y, x, -z]$	[12]