32 Point Groups

No. 1 C_1 1 [triclinic] tag = "C1"

* generator : 1

* conjugacy class

[1] = 1

* symmetry operation

① 1

* product table

	1
1	1

No. 2 C_i -1 [triclinic] tag = "Ci"

* generator : -1

* conjugacy class

$[\ 1\ ] = \quad 1$

$[\ -1\ ] = \quad -1$

* symmetry operation

① 1 ② -1

* product table

	1	-1
1	1	-1
-1	-1	1

No. 3 C_2 2 (b-axis setting) [monoclinic] tag = "C2"

* generator : 2_{010}

* conjugacy class

[1] = 1

[2_{010}] = 2_{010}

* symmetry operation

① 1 ② 2_{010}

* product table

	1	2_{010}
1	1	2_{010}
2_{010}	2_{010}	1

No. 4 C_s m (b-axis setting) [monoclinic] tag = "Cs"

* generator : m_{010}

* conjugacy class

[1] = 1

[m_{010}] = m_{010}

* symmetry operation

① 1 ② m_{010}

* product table

	1	m_{010}
1	1	m_{010}
m_{010}	m_{010}	1

No. 5 C_{2h} $2/m$ (b-axis setting) [monoclinic] tag = "C2h"

* generator : $2_{010},\ -1$

* conjugacy class

[1] = 1
[2_{010}] = 2_{010}
[-1] = -1
[m_{010}] = m_{010}

* symmetry operation

① 1 ② 2_{010} ③ -1 ④ m_{010}

* product table

	1	2_{010}	-1	m_{010}
1	1	2_{010}	-1	m_{010}
2_{010}	2_{010}	1	m_{010}	-1
-1	-1	m_{010}	1	2_{010}
m_{010}	m_{010}	-1	2_{010}	1

No. 6 D_2 222 [orthorhombic] tag = "D2"

* generator : $2_{001},\ 2_{010}$

* conjugacy class

[1] = 1
[2_{001}] = 2_{001}
[2_{010}] = 2_{010}
[2_{100}] = 2_{100}

* symmetry operation

① 1 ② 2_{001} ③ 2_{010} ④ 2_{100}

* product table

	1	2_{001}	2_{010}	2_{100}
1	1	2_{001}	2_{010}	2_{100}
2_{001}	2_{001}	1	2_{100}	2_{010}
2_{010}	2_{010}	2_{100}	1	2_{001}
2_{100}	2_{100}	2_{010}	2_{001}	1

No. 7 C_{2v} $mm2$ [orthorhombic] tag = "C2v"

* generator : 2_{001}, m_{010}

* conjugacy class

[1] = 1
[2_{001}] = 2_{001}
[m_{010}] = m_{010}
[m_{100}] = m_{100}

* symmetry operation

① 1 ② 2_{001} ③ m_{010} ④ m_{100}

* product table

	1	2_{001}	m_{010}	m_{100}
1	1	2_{001}	m_{010}	m_{100}
2_{001}	2_{001}	1	m_{100}	m_{010}
m_{010}	m_{010}	m_{100}	1	2_{001}
m_{100}	m_{100}	m_{010}	2_{001}	1

No. 8 D_{2h} mmm [orthorhombic] tag = "D2h"

* generator : $2_{001},\ 2_{010},\ -1$

* conjugacy class

$[\ 1\ ] = \quad 1$

$[\ 2_{001}\ ] = \quad 2_{001}$

$[\ 2_{010}\ ] = \quad 2_{010}$

$[\ 2_{100}\ ] = \quad 2_{100}$

$[\ -1\ ] = \quad -1$

$[\ \mathrm{m}_{001}\ ] = \quad \mathrm{m}_{001}$

$[\ \mathrm{m}_{010}\ ] = \quad \mathrm{m}_{010}$

$[\ \mathrm{m}_{100}\ ] = \quad \mathrm{m}_{100}$

* symmetry operation

① 1 ② 2_{001} ③ 2_{010} ④ 2_{100} ⑤ -1 ⑥ m_{001} ⑦ m_{010} ⑧ m_{100}

* product table

	1	2_{001}	2_{010}	2_{100}	-1	m_{001}	m_{010}	m_{100}
1	1	2_{001}	2_{010}	2_{100}	-1	m_{001}	m_{010}	m_{100}
2_{001}	2_{001}	1	2_{100}	2_{010}	m_{001}	-1	m_{100}	m_{010}
2_{010}	2_{010}	2_{100}	1	2_{001}	m_{010}	m_{100}	-1	m_{001}
2_{100}	2_{100}	2_{010}	2_{001}	1	m_{100}	m_{010}	m_{001}	-1
-1	-1	m_{001}	m_{010}	m_{100}	1	2_{001}	2_{010}	2_{100}
m_{001}	m_{001}	-1	m_{100}	m_{010}	2_{001}	1	2_{100}	2_{010}
m_{010}	m_{010}	m_{100}	-1	m_{001}	2_{010}	2_{100}	1	2_{001}
m_{100}	m_{100}	m_{010}	m_{001}	-1	2_{100}	2_{010}	2_{001}	1

No. 9 C_4 4 [tetragonal] tag = "C4"

* generator : 2_{001}, 4^+_{001}

* conjugacy class

[1] = 1
[2_{001}] = 2_{001}
[4^+_{001}] = 4^+_{001}
[4^-_{001}] = 4^-_{001}

* symmetry operation

① 1 ② 2_{001} ③ 4^+_{001} ④ 4^-_{001}

* product table

	1	2_{001}	4^+_{001}	4^-_{001}
1	1	2_{001}	4^+_{001}	4^-_{001}
2_{001}	2_{001}	1	4^-_{001}	4^+_{001}
4^+_{001}	4^+_{001}	4^-_{001}	2_{001}	1
4^-_{001}	4^-_{001}	4^+_{001}	1	2_{001}

No. 10 S_4 -4 [tetragonal] tag = "S4"

* generator : $2_{001},\ -4^{+}_{001}$

* conjugacy class

$[\ 1\ ] = \quad 1$

$[\ 2_{001}\ ] = \quad 2_{001}$

$[\ -4^{+}_{001}\ ] = \quad -4^{+}_{001}$

$[\ -4^{-}_{001}\ ] = \quad -4^{-}_{001}$

* symmetry operation

① 1 ② 2_{001} ③ -4^{+}_{001} ④ -4^{-}_{001}

* product table

	1	2_{001}	-4^{+}_{001}	-4^{-}_{001}
1	1	2_{001}	-4^{+}_{001}	-4^{-}_{001}
2_{001}	2_{001}	1	-4^{-}_{001}	-4^{+}_{001}
-4^{+}_{001}	-4^{+}_{001}	-4^{-}_{001}	2_{001}	1
-4^{-}_{001}	-4^{-}_{001}	-4^{+}_{001}	1	2_{001}

No. 11 C_{4h} $4/m$ [tetragonal] tag = "C4h"

* generator : $2_{001},\ 4^{+}_{001},\ -1$

* conjugacy class

[1] = 1
[2_{001}] = 2_{001}
[4^{+}_{001}] = 4^{+}_{001}
[4^{-}_{001}] = 4^{-}_{001}
[-1] = -1
[m_{001}] = m_{001}
[-4^{+}_{001}] = -4^{+}_{001}
[-4^{-}_{001}] = -4^{-}_{001}

* symmetry operation

① 1 ② 2_{001} ③ 4^{+}_{001} ④ 4^{-}_{001} ⑤ -1 ⑥ m_{001} ⑦ -4^{+}_{001} ⑧ -4^{-}_{001}

* product table

	1	2_{001}	4^{+}_{001}	4^{-}_{001}	-1	m_{001}	-4^{+}_{001}	-4^{-}_{001}
1	1	2_{001}	4^{+}_{001}	4^{-}_{001}	-1	m_{001}	-4^{+}_{001}	-4^{-}_{001}
2_{001}	2_{001}	1	4^{-}_{001}	4^{+}_{001}	m_{001}	-1	-4^{-}_{001}	-4^{+}_{001}
4^{+}_{001}	4^{+}_{001}	4^{-}_{001}	2_{001}	1	-4^{+}_{001}	-4^{-}_{001}	m_{001}	-1
4^{-}_{001}	4^{-}_{001}	4^{+}_{001}	1	2_{001}	-4^{-}_{001}	-4^{+}_{001}	-1	m_{001}
-1	-1	m_{001}	-4^{+}_{001}	-4^{-}_{001}	1	2_{001}	4^{+}_{001}	4^{-}_{001}
m_{001}	m_{001}	-1	-4^{-}_{001}	-4^{+}_{001}	2_{001}	1	4^{-}_{001}	4^{+}_{001}
-4^{+}_{001}	-4^{+}_{001}	-4^{-}_{001}	m_{001}	-1	4^{+}_{001}	4^{-}_{001}	2_{001}	1
-4^{-}_{001}	-4^{-}_{001}	-4^{+}_{001}	-1	m_{001}	4^{-}_{001}	4^{+}_{001}	1	2_{001}

No. 12　D_4　422　[tetragonal] tag = "D4"

* generator : $2_{001},\ 4^+_{001},\ 2_{010}$

* conjugacy class

[1] = 1

[2_{001}] = 2_{001}

[2_{100}] = $2_{100},\ 2_{010}$

[2_{110}] = $2_{110},\ 2_{1-10}$

[4^+_{001}] = $4^+_{001},\ 4^-_{001}$

* symmetry operation

① 1　② 2_{001}　③ 2_{100}　④ 2_{010}　⑤ 2_{110}　⑥ 2_{1-10}　⑦ 4^+_{001}　⑧ 4^-_{001}

* product table

	1	2_{001}	2_{100}	2_{010}	2_{110}	2_{1-10}	4^+_{001}	4^-_{001}
1	1	2_{001}	2_{100}	2_{010}	2_{110}	2_{1-10}	4^+_{001}	4^-_{001}
2_{001}	2_{001}	1	2_{010}	2_{100}	2_{1-10}	2_{110}	4^-_{001}	4^+_{001}
2_{100}	2_{100}	2_{010}	1	2_{001}	4^-_{001}	4^+_{001}	2_{1-10}	2_{110}
2_{010}	2_{010}	2_{100}	2_{001}	1	4^+_{001}	4^-_{001}	2_{110}	2_{1-10}
2_{110}	2_{110}	2_{1-10}	4^+_{001}	4^-_{001}	1	2_{001}	2_{100}	2_{010}
2_{1-10}	2_{1-10}	2_{110}	4^-_{001}	4^+_{001}	2_{001}	1	2_{010}	2_{100}
4^+_{001}	4^+_{001}	4^-_{001}	2_{110}	2_{1-10}	2_{010}	2_{100}	2_{001}	1
4^-_{001}	4^-_{001}	4^+_{001}	2_{1-10}	2_{110}	2_{100}	2_{010}	1	2_{001}

No. 13 C_{4v} $4mm$ [tetragonal] tag = "C4v"

* generator : $2_{001},\ 4^{+}_{001},\ \mathrm{m}_{010}$

* conjugacy class

[1] = 1

[2_{001}] = 2_{001}

[4^{+}_{001}] = $4^{+}_{001},\ 4^{-}_{001}$

[m_{100}] = $\mathrm{m}_{100},\ \mathrm{m}_{010}$

[m_{110}] = $\mathrm{m}_{110},\ \mathrm{m}_{1-10}$

* symmetry operation

① 1 ② 2_{001} ③ 4^{+}_{001} ④ 4^{-}_{001} ⑤ m_{100} ⑥ m_{010} ⑦ m_{110} ⑧ m_{1-10}

* product table

	1	2_{001}	4^{+}_{001}	4^{-}_{001}	m_{100}	m_{010}	m_{110}	m_{1-10}
1	1	2_{001}	4^{+}_{001}	4^{-}_{001}	m_{100}	m_{010}	m_{110}	m_{1-10}
2_{001}	2_{001}	1	4^{-}_{001}	4^{+}_{001}	m_{010}	m_{100}	m_{1-10}	m_{110}
4^{+}_{001}	4^{+}_{001}	4^{-}_{001}	2_{001}	1	m_{110}	m_{1-10}	m_{010}	m_{100}
4^{-}_{001}	4^{-}_{001}	4^{+}_{001}	1	2_{001}	m_{1-10}	m_{110}	m_{100}	m_{010}
m_{100}	m_{100}	m_{010}	m_{1-10}	m_{110}	1	2_{001}	4^{-}_{001}	4^{+}_{001}
m_{010}	m_{010}	m_{100}	m_{110}	m_{1-10}	2_{001}	1	4^{+}_{001}	4^{-}_{001}
m_{110}	m_{110}	m_{1-10}	m_{100}	m_{010}	4^{+}_{001}	4^{-}_{001}	1	2_{001}
m_{1-10}	m_{1-10}	m_{110}	m_{010}	m_{100}	4^{-}_{001}	4^{+}_{001}	2_{001}	1

No. 14 D_{2d} $-42m$ (-42m setting) [tetragonal] tag = "D2d"

* generator : $2_{001},\ -4^{+}_{001},\ 2_{010}$

* conjugacy class

[1] = 1

[2_{001}] = 2_{001}

[2_{100}] = $2_{100},\ 2_{010}$

[m_{110}] = $\mathrm{m}_{110},\ \mathrm{m}_{1-10}$

[-4^{+}_{001}] = $-4^{+}_{001},\ -4^{-}_{001}$

* symmetry operation

① 1 ② 2_{001} ③ 2_{100} ④ 2_{010} ⑤ m_{110} ⑥ m_{1-10} ⑦ -4^{+}_{001} ⑧ -4^{-}_{001}

* product table

	1	2_{001}	2_{100}	2_{010}	m_{110}	m_{1-10}	-4^{+}_{001}	-4^{-}_{001}
1	1	2_{001}	2_{100}	2_{010}	m_{110}	m_{1-10}	-4^{+}_{001}	-4^{-}_{001}
2_{001}	2_{001}	1	2_{010}	2_{100}	m_{1-10}	m_{110}	-4^{-}_{001}	-4^{+}_{001}
2_{100}	2_{100}	2_{010}	1	2_{001}	-4^{-}_{001}	-4^{+}_{001}	m_{1-10}	m_{110}
2_{010}	2_{010}	2_{100}	2_{001}	1	-4^{+}_{001}	-4^{-}_{001}	m_{110}	m_{1-10}
m_{110}	m_{110}	m_{1-10}	-4^{+}_{001}	-4^{-}_{001}	1	2_{001}	2_{100}	2_{010}
m_{1-10}	m_{1-10}	m_{110}	-4^{-}_{001}	-4^{+}_{001}	2_{001}	1	2_{010}	2_{100}
-4^{+}_{001}	-4^{+}_{001}	-4^{-}_{001}	m_{110}	m_{1-10}	2_{010}	2_{100}	2_{001}	1
-4^{-}_{001}	-4^{-}_{001}	-4^{+}_{001}	m_{1-10}	m_{110}	2_{100}	2_{010}	1	2_{001}

No. 14 $D_{2d}-1$ $-4m2$ (-4m2 setting) [tetragonal] tag = "D2d-1"

* generator : $2_{001},\ -4^{+}_{001},\ \mathrm{m}_{010}$

* conjugacy class

[1] = 1

[2_{001}] = 2_{001}

[2_{110}] = $2_{110},\ 2_{1-10}$

[m_{100}] = $\mathrm{m}_{100},\ \mathrm{m}_{010}$

[-4^{+}_{001}] = $-4^{+}_{001},\ -4^{-}_{001}$

* symmetry operation

① 1 ② 2_{001} ③ 2_{110} ④ 2_{1-10} ⑤ m_{100} ⑥ m_{010} ⑦ -4^{+}_{001} ⑧ -4^{-}_{001}

* product table

	1	2_{001}	2_{110}	2_{1-10}	m_{100}	m_{010}	-4^{+}_{001}	-4^{-}_{001}
1	1	2_{001}	2_{110}	2_{1-10}	m_{100}	m_{010}	-4^{+}_{001}	-4^{-}_{001}
2_{001}	2_{001}	1	2_{1-10}	2_{110}	m_{010}	m_{100}	-4^{-}_{001}	-4^{+}_{001}
2_{110}	2_{110}	2_{1-10}	1	2_{001}	-4^{+}_{001}	-4^{-}_{001}	m_{100}	m_{010}
2_{1-10}	2_{1-10}	2_{110}	2_{001}	1	-4^{-}_{001}	-4^{+}_{001}	m_{010}	m_{100}
m_{100}	m_{100}	m_{010}	-4^{-}_{001}	-4^{+}_{001}	1	2_{001}	2_{1-10}	2_{110}
m_{010}	m_{010}	m_{100}	-4^{+}_{001}	-4^{-}_{001}	2_{001}	1	2_{110}	2_{1-10}
-4^{+}_{001}	-4^{+}_{001}	-4^{-}_{001}	m_{010}	m_{100}	2_{110}	2_{1-10}	2_{001}	1
-4^{-}_{001}	-4^{-}_{001}	-4^{+}_{001}	m_{100}	m_{010}	2_{1-10}	2_{110}	1	2_{001}

No. 15 D_{4h} $4/mmm$ [tetragonal] tag = "D4h"

* generator : $2_{001},\ 4^{+}_{001},\ 2_{010},\ -1$

* conjugacy class

$[\ 1\ ] = \quad 1$

$[\ 2_{001}\ ] = \quad 2_{001}$

$[\ 2_{100}\ ] = \quad 2_{100},\ 2_{010}$

$[\ 2_{110}\ ] = \quad 2_{110},\ 2_{1-10}$

$[\ 4^{+}_{001}\ ] = \quad 4^{+}_{001},\ 4^{-}_{001}$

$[\ -1\ ] = \quad -1$

$[\ \mathrm{m}_{001}\ ] = \quad \mathrm{m}_{001}$

$[\ \mathrm{m}_{100}\ ] = \quad \mathrm{m}_{100},\ \mathrm{m}_{010}$

$[\ \mathrm{m}_{110}\ ] = \quad \mathrm{m}_{110},\ \mathrm{m}_{1-10}$

$[\ -4^{+}_{001}\ ] = \quad -4^{+}_{001},\ -4^{-}_{001}$

* symmetry operation

①	1	②	2_{001}	③	2_{100}	④	2_{010}	⑤	2_{110}	⑥	2_{1-10}	⑦	4^{+}_{001}	⑧	4^{-}_{001}	⑨	-1	⑩	m_{001}
⑪	m_{100}	⑫	m_{010}	⑬	m_{110}	⑭	m_{1-10}	⑮	-4^{+}_{001}	⑯	-4^{-}_{001}								

* product table

	1	2_{001}	2_{100}	2_{010}	2_{110}	2_{1-10}	4^+_{001}	4^-_{001}	-1	m_{001}	m_{100}	m_{010}	m_{110}	m_{1-10}	-4^+_{001}	-4^-_{001}
1	1	2_{001}	2_{100}	2_{010}	2_{110}	2_{1-10}	4^+_{001}	4^-_{001}	-1	m_{001}	m_{100}	m_{010}	m_{110}	m_{1-10}	-4^+_{001}	-4^-_{001}
2_{001}	2_{001}	1	2_{010}	2_{100}	2_{1-10}	2_{110}	4^-_{001}	4^+_{001}	m_{001}	-1	m_{010}	m_{100}	m_{1-10}	m_{110}	-4^-_{001}	-4^+_{001}
2_{100}	2_{100}	2_{010}	1	2_{001}	4^-_{001}	4^+_{001}	2_{1-10}	2_{110}	m_{100}	m_{010}	-1	m_{001}	-4^-_{001}	-4^+_{001}	m_{1-10}	m_{110}
2_{010}	2_{010}	2_{100}	2_{001}	1	4^+_{001}	4^-_{001}	2_{110}	2_{1-10}	m_{010}	m_{100}	m_{001}	-1	-4^+_{001}	-4^-_{001}	m_{110}	m_{1-10}
2_{110}	2_{110}	2_{1-10}	4^+_{001}	4^-_{001}	1	2_{001}	2_{100}	2_{010}	m_{110}	m_{1-10}	-4^+_{001}	-4^-_{001}	-1	m_{001}	m_{100}	m_{010}
2_{1-10}	2_{1-10}	2_{110}	4^-_{001}	4^+_{001}	2_{001}	1	2_{010}	2_{100}	m_{1-10}	m_{110}	-4^-_{001}	-4^+_{001}	m_{001}	-1	m_{010}	m_{100}
4^+_{001}	4^+_{001}	4^-_{001}	2_{110}	2_{1-10}	2_{010}	2_{100}	2_{001}	1	-4^+_{001}	-4^-_{001}	m_{110}	m_{1-10}	m_{010}	m_{100}	m_{001}	-1
4^-_{001}	4^-_{001}	4^+_{001}	2_{1-10}	2_{110}	2_{100}	2_{010}	1	2_{001}	-4^-_{001}	-4^+_{001}	m_{1-10}	m_{110}	m_{100}	m_{010}	-1	m_{001}
-1	-1	m_{001}	m_{100}	m_{010}	m_{110}	m_{1-10}	-4^+_{001}	-4^-_{001}	1	2_{001}	2_{100}	2_{010}	2_{110}	2_{1-10}	4^+_{001}	4^-_{001}
m_{001}	m_{001}	-1	m_{010}	m_{100}	m_{1-10}	m_{110}	-4^-_{001}	-4^+_{001}	2_{001}	1	2_{010}	2_{100}	2_{1-10}	2_{110}	4^-_{001}	4^+_{001}
m_{100}	m_{100}	m_{010}	-1	m_{001}	-4^-_{001}	-4^+_{001}	m_{1-10}	m_{110}	2_{100}	2_{010}	1	2_{001}	4^-_{001}	4^+_{001}	2_{1-10}	2_{110}
m_{010}	m_{010}	m_{100}	m_{001}	-1	-4^+_{001}	-4^-_{001}	m_{110}	m_{1-10}	2_{010}	2_{100}	2_{001}	1	4^+_{001}	4^-_{001}	2_{110}	2_{1-10}
m_{110}	m_{110}	m_{1-10}	-4^+_{001}	-4^-_{001}	-1	m_{001}	m_{100}	m_{010}	2_{110}	2_{1-10}	4^+_{001}	4^-_{001}	1	2_{001}	2_{100}	2_{010}
m_{1-10}	m_{1-10}	m_{110}	-4^-_{001}	-4^+_{001}	m_{001}	-1	m_{010}	m_{100}	2_{1-10}	2_{110}	4^-_{001}	4^+_{001}	2_{001}	1	2_{010}	2_{100}
-4^+_{001}	-4^+_{001}	-4^-_{001}	m_{110}	m_{1-10}	m_{010}	m_{100}	m_{001}	-1	4^+_{001}	4^-_{001}	2_{110}	2_{1-10}	2_{010}	2_{100}	2_{001}	1
-4^-_{001}	-4^-_{001}	-4^+_{001}	m_{1-10}	m_{110}	m_{100}	m_{010}	-1	m_{001}	4^-_{001}	4^+_{001}	2_{1-10}	2_{110}	2_{100}	2_{010}	1	2_{001}

No. 16 C_3 3 [trigonal] tag = "C3"

* generator : 3^+_{001}

* conjugacy class

$[\ 1\ ] = \quad 1$

$[\ 3^+_{001}\ ] = \quad 3^+_{001}$

$[\ 3^-_{001}\ ] = \quad 3^-_{001}$

* symmetry operation

① 1 ② 3^+_{001} ③ 3^-_{001}

* product table

	1	3^+_{001}	3^-_{001}
1	1	3^+_{001}	3^-_{001}
3^+_{001}	3^+_{001}	3^-_{001}	1
3^-_{001}	3^-_{001}	1	3^+_{001}

No. 17 C_{3i} -3 [trigonal] tag = "C3i"

* generator : 3^{+}_{001}, -1

* conjugacy class

$[\ 1\ ] = \quad 1$

$[\ 3^{+}_{001}\ ] = \quad 3^{+}_{001}$

$[\ 3^{-}_{001}\ ] = \quad 3^{-}_{001}$

$[\ -1\ ] = \quad -1$

$[\ -3^{+}_{001}\ ] = \quad -3^{+}_{001}$

$[\ -3^{-}_{001}\ ] = \quad -3^{-}_{001}$

* symmetry operation

① 1 ② 3^{+}_{001} ③ 3^{-}_{001} ④ -1 ⑤ -3^{+}_{001} ⑥ -3^{-}_{001}

* product table

	1	3^{+}_{001}	3^{-}_{001}	-1	-3^{+}_{001}	-3^{-}_{001}
1	1	3^{+}_{001}	3^{-}_{001}	-1	-3^{+}_{001}	-3^{-}_{001}
3^{+}_{001}	3^{+}_{001}	3^{-}_{001}	1	-3^{+}_{001}	-3^{-}_{001}	-1
3^{-}_{001}	3^{-}_{001}	1	3^{+}_{001}	-3^{-}_{001}	-1	-3^{+}_{001}
-1	-1	-3^{+}_{001}	-3^{-}_{001}	1	3^{+}_{001}	3^{-}_{001}
-3^{+}_{001}	-3^{+}_{001}	-3^{-}_{001}	-1	3^{+}_{001}	3^{-}_{001}	1
-3^{-}_{001}	-3^{-}_{001}	-1	-3^{+}_{001}	3^{-}_{001}	1	3^{+}_{001}

No. 18　D_3　312　(312 setting)　[trigonal] tag = "D3"

* generator : $3^+_{001},\ 2_{1-10}$

* conjugacy class

[1] = 1

[2_{120}] = $2_{120},\ 2_{210},\ 2_{1-10}$

[3^+_{001}] = $3^+_{001},\ 3^-_{001}$

* symmetry operation

① 1　② 2_{120}　③ 2_{210}　④ 2_{1-10}　⑤ 3^+_{001}　⑥ 3^-_{001}

* product table

	1	2_{120}	2_{210}	2_{1-10}	3^+_{001}	3^-_{001}
1	1	2_{120}	2_{210}	2_{1-10}	3^+_{001}	3^-_{001}
2_{120}	2_{120}	1	3^+_{001}	3^-_{001}	2_{210}	2_{1-10}
2_{210}	2_{210}	3^-_{001}	1	3^+_{001}	2_{1-10}	2_{120}
2_{1-10}	2_{1-10}	3^+_{001}	3^-_{001}	1	2_{120}	2_{210}
3^+_{001}	3^+_{001}	2_{1-10}	2_{120}	2_{210}	3^-_{001}	1
3^-_{001}	3^-_{001}	2_{210}	2_{1-10}	2_{120}	1	3^+_{001}

No. 18　$D_3 - 1$　321　(321 setting)　[trigonal] tag = "D3-1"

* generator : $3^+_{001},\ 2_{110}$

* conjugacy class

[1] = 1

[2_{100}] = $2_{100},\ 2_{010},\ 2_{110}$

[3^+_{001}] = $3^+_{001},\ 3^-_{001}$

* symmetry operation

① 1　② 2_{100}　③ 2_{010}　④ 2_{110}　⑤ 3^+_{001}　⑥ 3^-_{001}

* product table

	1	2_{100}	2_{010}	2_{110}	3^+_{001}	3^-_{001}
1	1	2_{100}	2_{010}	2_{110}	3^+_{001}	3^-_{001}
2_{100}	2_{100}	1	3^+_{001}	3^-_{001}	2_{010}	2_{110}
2_{010}	2_{010}	3^-_{001}	1	3^+_{001}	2_{110}	2_{100}
2_{110}	2_{110}	3^+_{001}	3^-_{001}	1	2_{100}	2_{010}
3^+_{001}	3^+_{001}	2_{110}	2_{100}	2_{010}	3^-_{001}	1
3^-_{001}	3^-_{001}	2_{010}	2_{110}	2_{100}	1	3^+_{001}

No. 19 C_{3v} $3m1$ (3m1 setting) [trigonal] tag = "C3v"

* generator : 3^{+}_{001}, m_{110}

* conjugacy class

[1] = 1

[3^{+}_{001}] = 3^{+}_{001}, 3^{-}_{001}

[m_{100}] = m_{100}, m_{010}, m_{110}

* symmetry operation

① 1 ② 3^{+}_{001} ③ 3^{-}_{001} ④ m_{100} ⑤ m_{010} ⑥ m_{110}

* product table

	1	3^{+}_{001}	3^{-}_{001}	m_{100}	m_{010}	m_{110}
1	1	3^{+}_{001}	3^{-}_{001}	m_{100}	m_{010}	m_{110}
3^{+}_{001}	3^{+}_{001}	3^{-}_{001}	1	m_{110}	m_{100}	m_{010}
3^{-}_{001}	3^{-}_{001}	1	3^{+}_{001}	m_{010}	m_{110}	m_{100}
m_{100}	m_{100}	m_{010}	m_{110}	1	3^{+}_{001}	3^{-}_{001}
m_{010}	m_{010}	m_{110}	m_{100}	3^{-}_{001}	1	3^{+}_{001}
m_{110}	m_{110}	m_{100}	m_{010}	3^{+}_{001}	3^{-}_{001}	1

No. 19 $C_{3v}-1$ $31m$ (31m setting) [trigonal] tag = "C3v-1"

* generator : 3^{+}_{001}, m_{1-10}

* conjugacy class

[1] = 1

[3^{+}_{001}] = 3^{+}_{001}, 3^{-}_{001}

[m_{120}] = m_{120}, m_{210}, m_{1-10}

* symmetry operation

① 1 ② 3^{+}_{001} ③ 3^{-}_{001} ④ m_{120} ⑤ m_{210} ⑥ m_{1-10}

* product table

	1	3^{+}_{001}	3^{-}_{001}	m_{120}	m_{210}	m_{1-10}
1	1	3^{+}_{001}	3^{-}_{001}	m_{120}	m_{210}	m_{1-10}
3^{+}_{001}	3^{+}_{001}	3^{-}_{001}	1	m_{1-10}	m_{120}	m_{210}
3^{-}_{001}	3^{-}_{001}	1	3^{+}_{001}	m_{210}	m_{1-10}	m_{120}
m_{120}	m_{120}	m_{210}	m_{1-10}	1	3^{+}_{001}	3^{-}_{001}
m_{210}	m_{210}	m_{1-10}	m_{120}	3^{-}_{001}	1	3^{+}_{001}
m_{1-10}	m_{1-10}	m_{120}	m_{210}	3^{+}_{001}	3^{-}_{001}	1

No. 20 D_{3d} $-31m$ (-31m setting) [trigonal] tag = "D3d"

* generator : $3^{+}_{001},\ 2_{1-10},\ -1$

* conjugacy class

[1] = 1

[2_{120}] = $2_{120},\ 2_{210},\ 2_{1-10}$

[3^{+}_{001}] = $3^{+}_{001},\ 3^{-}_{001}$

[-1] = -1

[m_{120}] = $\mathrm{m}_{120},\ \mathrm{m}_{210},\ \mathrm{m}_{1-10}$

[-3^{+}_{001}] = $-3^{+}_{001},\ -3^{-}_{001}$

* symmetry operation

① 1 ② 2_{120} ③ 2_{210} ④ 2_{1-10} ⑤ 3^{+}_{001} ⑥ 3^{-}_{001} ⑦ -1 ⑧ m_{120} ⑨ m_{210} ⑩ m_{1-10}

⑪ -3^{+}_{001} ⑫ -3^{-}_{001}

* product table

	1	2_{120}	2_{210}	2_{1-10}	3^{+}_{001}	3^{-}_{001}	-1	m_{120}	m_{210}	m_{1-10}	-3^{+}_{001}	-3^{-}_{001}
1	1	2_{120}	2_{210}	2_{1-10}	3^{+}_{001}	3^{-}_{001}	-1	m_{120}	m_{210}	m_{1-10}	-3^{+}_{001}	-3^{-}_{001}
2_{120}	2_{120}	1	3^{+}_{001}	3^{-}_{001}	2_{210}	2_{1-10}	m_{120}	-1	-3^{+}_{001}	-3^{-}_{001}	m_{210}	m_{1-10}
2_{210}	2_{210}	3^{-}_{001}	1	3^{+}_{001}	2_{1-10}	2_{120}	m_{210}	-3^{-}_{001}	-1	-3^{+}_{001}	m_{1-10}	m_{120}
2_{1-10}	2_{1-10}	3^{+}_{001}	3^{-}_{001}	1	2_{120}	2_{210}	m_{1-10}	-3^{+}_{001}	-3^{-}_{001}	-1	m_{120}	m_{210}
3^{+}_{001}	3^{+}_{001}	2_{1-10}	2_{120}	2_{210}	3^{-}_{001}	1	-3^{+}_{001}	m_{1-10}	m_{120}	m_{210}	-3^{-}_{001}	-1
3^{-}_{001}	3^{-}_{001}	2_{210}	2_{1-10}	2_{120}	1	3^{+}_{001}	-3^{-}_{001}	m_{210}	m_{1-10}	m_{120}	-1	-3^{+}_{001}
-1	-1	m_{120}	m_{210}	m_{1-10}	-3^{+}_{001}	-3^{-}_{001}	1	2_{120}	2_{210}	2_{1-10}	3^{+}_{001}	3^{-}_{001}
m_{120}	m_{120}	-1	-3^{+}_{001}	-3^{-}_{001}	m_{210}	m_{1-10}	2_{120}	1	3^{+}_{001}	3^{-}_{001}	2_{210}	2_{1-10}
m_{210}	m_{210}	-3^{-}_{001}	-1	-3^{+}_{001}	m_{1-10}	m_{120}	2_{210}	3^{-}_{001}	1	3^{+}_{001}	2_{1-10}	2_{120}
m_{1-10}	m_{1-10}	-3^{+}_{001}	-3^{-}_{001}	-1	m_{120}	m_{210}	2_{1-10}	3^{+}_{001}	3^{-}_{001}	1	2_{120}	2_{210}
-3^{+}_{001}	-3^{+}_{001}	m_{1-10}	m_{120}	m_{210}	-3^{-}_{001}	-1	3^{+}_{001}	2_{1-10}	2_{120}	2_{210}	3^{-}_{001}	1
-3^{-}_{001}	-3^{-}_{001}	m_{210}	m_{1-10}	m_{120}	-1	-3^{+}_{001}	3^{-}_{001}	2_{210}	2_{1-10}	2_{120}	1	3^{+}_{001}

No. 20 $D_{3d}-1$ $-3m1$ (-3m1 setting) [trigonal] tag = "D3d-1"

* generator : $3^{+}_{001},\ 2_{110},\ -1$

* conjugacy class

[1] = 1

[2_{100}] = $2_{100},\ 2_{010},\ 2_{110}$

[3^{+}_{001}] = $3^{+}_{001},\ 3^{-}_{001}$

[-1] = -1

[m_{100}] = $\mathrm{m}_{100},\ \mathrm{m}_{010},\ \mathrm{m}_{110}$

[-3^{+}_{001}] = $-3^{+}_{001},\ -3^{-}_{001}$

* symmetry operation

① 1 ② 2_{100} ③ 2_{010} ④ 2_{110} ⑤ 3^{+}_{001} ⑥ 3^{-}_{001} ⑦ -1 ⑧ m_{100} ⑨ m_{010} ⑩ m_{110}

⑪ -3^{+}_{001} ⑫ -3^{-}_{001}

* product table

	1	2_{100}	2_{010}	2_{110}	3^+_{001}	3^-_{001}	-1	m_{100}	m_{010}	m_{110}	-3^+_{001}	-3^-_{001}
1	1	2_{100}	2_{010}	2_{110}	3^+_{001}	3^-_{001}	-1	m_{100}	m_{010}	m_{110}	-3^+_{001}	-3^-_{001}
2_{100}	2_{100}	1	3^+_{001}	3^-_{001}	2_{010}	2_{110}	m_{100}	-1	-3^+_{001}	-3^-_{001}	m_{010}	m_{110}
2_{010}	2_{010}	3^-_{001}	1	3^+_{001}	2_{110}	2_{100}	m_{010}	-3^-_{001}	-1	-3^+_{001}	m_{110}	m_{100}
2_{110}	2_{110}	3^+_{001}	3^-_{001}	1	2_{100}	2_{010}	m_{110}	-3^+_{001}	-3^-_{001}	-1	m_{100}	m_{010}
3^+_{001}	3^+_{001}	2_{110}	2_{100}	2_{010}	3^-_{001}	1	-3^+_{001}	m_{110}	m_{100}	m_{010}	-3^-_{001}	-1
3^-_{001}	3^-_{001}	2_{010}	2_{110}	2_{100}	1	3^+_{001}	-3^-_{001}	m_{010}	m_{110}	m_{100}	-1	-3^+_{001}
-1	-1	m_{100}	m_{010}	m_{110}	-3^+_{001}	-3^-_{001}	1	2_{100}	2_{010}	2_{110}	3^+_{001}	3^-_{001}
m_{100}	m_{100}	-1	-3^+_{001}	-3^-_{001}	m_{010}	m_{110}	2_{100}	1	3^+_{001}	3^-_{001}	2_{010}	2_{110}
m_{010}	m_{010}	-3^-_{001}	-1	-3^+_{001}	m_{110}	m_{100}	2_{010}	3^-_{001}	1	3^+_{001}	2_{110}	2_{100}
m_{110}	m_{110}	-3^+_{001}	-3^-_{001}	-1	m_{100}	m_{010}	2_{110}	3^+_{001}	3^-_{001}	1	2_{100}	2_{010}
-3^+_{001}	-3^+_{001}	m_{110}	m_{100}	m_{010}	-3^-_{001}	-1	3^+_{001}	2_{110}	2_{100}	2_{010}	3^-_{001}	1
-3^-_{001}	-3^-_{001}	m_{010}	m_{110}	m_{100}	-1	-3^+_{001}	3^-_{001}	2_{010}	2_{110}	2_{100}	1	3^+_{001}

No. 21 C_6 6 [hexagonal] tag = "C6"

* generator : 3^+_{001}, 2_{001}

* conjugacy class

[1] = 1
[2_{001}] = 2_{001}
[3^+_{001}] = 3^+_{001}
[3^-_{001}] = 3^-_{001}
[6^+_{001}] = 6^+_{001}
[6^-_{001}] = 6^-_{001}

* symmetry operation

① 1 ② 2_{001} ③ 3^+_{001} ④ 3^-_{001} ⑤ 6^+_{001} ⑥ 6^-_{001}

* product table

	1	2_{001}	3^+_{001}	3^-_{001}	6^+_{001}	6^-_{001}
1	1	2_{001}	3^+_{001}	3^-_{001}	6^+_{001}	6^-_{001}
2_{001}	2_{001}	1	6^-_{001}	6^+_{001}	3^-_{001}	3^+_{001}
3^+_{001}	3^+_{001}	6^-_{001}	3^-_{001}	1	2_{001}	6^+_{001}
3^-_{001}	3^-_{001}	6^+_{001}	1	3^+_{001}	6^-_{001}	2_{001}
6^+_{001}	6^+_{001}	3^-_{001}	2_{001}	6^-_{001}	3^+_{001}	1
6^-_{001}	6^-_{001}	3^+_{001}	6^+_{001}	2_{001}	1	3^-_{001}

No. 22 C_{3h} -6 [hexagonal] tag = "C3h"

* generator : 3^{+}_{001}, m_{001}

* conjugacy class

$[\ 1\ ] = \quad 1$
$[\ 3^{+}_{001}\ ] = \quad 3^{+}_{001}$
$[\ 3^{-}_{001}\ ] = \quad 3^{-}_{001}$
$[\ \mathrm{m}_{001}\ ] = \quad \mathrm{m}_{001}$
$[\ -6^{+}_{001}\ ] = \quad -6^{+}_{001}$
$[\ -6^{-}_{001}\ ] = \quad -6^{-}_{001}$

* symmetry operation

① 1 ② 3^{+}_{001} ③ 3^{-}_{001} ④ m_{001} ⑤ -6^{+}_{001} ⑥ -6^{-}_{001}

* product table

	1	3^{+}_{001}	3^{-}_{001}	m_{001}	-6^{+}_{001}	-6^{-}_{001}
1	1	3^{+}_{001}	3^{-}_{001}	m_{001}	-6^{+}_{001}	-6^{-}_{001}
3^{+}_{001}	3^{+}_{001}	3^{-}_{001}	1	-6^{-}_{001}	m_{001}	-6^{+}_{001}
3^{-}_{001}	3^{-}_{001}	1	3^{+}_{001}	-6^{+}_{001}	-6^{-}_{001}	m_{001}
m_{001}	m_{001}	-6^{-}_{001}	-6^{+}_{001}	1	3^{-}_{001}	3^{+}_{001}
-6^{+}_{001}	-6^{+}_{001}	m_{001}	-6^{-}_{001}	3^{-}_{001}	3^{+}_{001}	1
-6^{-}_{001}	-6^{-}_{001}	-6^{+}_{001}	m_{001}	3^{+}_{001}	1	3^{-}_{001}

No. 23 C_{6h} $6/m$ [hexagonal] tag = "C6h"

* generator : 3^{+}_{001}, 2_{001}, -1

* conjugacy class

[1] = 1
[2_{001}] = 2_{001}
[3^{+}_{001}] = 3^{+}_{001}
[3^{-}_{001}] = 3^{-}_{001}
[6^{+}_{001}] = 6^{+}_{001}
[6^{-}_{001}] = 6^{-}_{001}
[-1] = -1
[m_{001}] = m_{001}
[-3^{+}_{001}] = -3^{+}_{001}
[-3^{-}_{001}] = -3^{-}_{001}
[-6^{+}_{001}] = -6^{+}_{001}
[-6^{-}_{001}] = -6^{-}_{001}

* symmetry operation

① 1 ② 2_{001} ③ 3^{+}_{001} ④ 3^{-}_{001} ⑤ 6^{+}_{001} ⑥ 6^{-}_{001} ⑦ -1 ⑧ m_{001} ⑨ -3^{+}_{001} ⑩ -3^{-}_{001}
⑪ -6^{+}_{001} ⑫ -6^{-}_{001}

* product table

	1	2_{001}	3^{+}_{001}	3^{-}_{001}	6^{+}_{001}	6^{-}_{001}	-1	m_{001}	-3^{+}_{001}	-3^{-}_{001}	-6^{+}_{001}	-6^{-}_{001}
1	1	2_{001}	3^{+}_{001}	3^{-}_{001}	6^{+}_{001}	6^{-}_{001}	-1	m_{001}	-3^{+}_{001}	-3^{-}_{001}	-6^{+}_{001}	-6^{-}_{001}
2_{001}	2_{001}	1	6^{-}_{001}	6^{+}_{001}	3^{-}_{001}	3^{+}_{001}	m_{001}	-1	-6^{-}_{001}	-6^{+}_{001}	-3^{-}_{001}	-3^{+}_{001}
3^{+}_{001}	3^{+}_{001}	6^{-}_{001}	3^{-}_{001}	1	2_{001}	6^{+}_{001}	-3^{+}_{001}	-6^{-}_{001}	-3^{-}_{001}	-1	m_{001}	-6^{+}_{001}
3^{-}_{001}	3^{-}_{001}	6^{+}_{001}	1	3^{+}_{001}	6^{-}_{001}	2_{001}	-3^{-}_{001}	-6^{+}_{001}	-1	-3^{+}_{001}	-6^{-}_{001}	m_{001}
6^{+}_{001}	6^{+}_{001}	3^{-}_{001}	2_{001}	6^{-}_{001}	3^{+}_{001}	1	-6^{+}_{001}	-3^{-}_{001}	m_{001}	-6^{-}_{001}	-3^{+}_{001}	-1
6^{-}_{001}	6^{-}_{001}	3^{+}_{001}	6^{+}_{001}	2_{001}	1	3^{-}_{001}	-6^{-}_{001}	-3^{+}_{001}	-6^{+}_{001}	m_{001}	-1	-3^{-}_{001}
-1	-1	m_{001}	-3^{+}_{001}	-3^{-}_{001}	-6^{+}_{001}	-6^{-}_{001}	1	2_{001}	3^{+}_{001}	3^{-}_{001}	6^{+}_{001}	6^{-}_{001}
m_{001}	m_{001}	-1	-6^{-}_{001}	-6^{+}_{001}	-3^{-}_{001}	-3^{+}_{001}	2_{001}	1	6^{-}_{001}	6^{+}_{001}	3^{-}_{001}	3^{+}_{001}
-3^{+}_{001}	-3^{+}_{001}	-6^{-}_{001}	-3^{-}_{001}	-1	m_{001}	-6^{+}_{001}	3^{+}_{001}	6^{-}_{001}	3^{-}_{001}	1	2_{001}	6^{+}_{001}
-3^{-}_{001}	-3^{-}_{001}	-6^{+}_{001}	-1	-3^{+}_{001}	-6^{-}_{001}	m_{001}	3^{-}_{001}	6^{+}_{001}	1	3^{+}_{001}	6^{-}_{001}	2_{001}
-6^{+}_{001}	-6^{+}_{001}	-3^{-}_{001}	m_{001}	-6^{-}_{001}	-3^{+}_{001}	-1	6^{+}_{001}	3^{-}_{001}	2_{001}	6^{-}_{001}	3^{+}_{001}	1
-6^{-}_{001}	-6^{-}_{001}	-3^{+}_{001}	-6^{+}_{001}	m_{001}	-1	-3^{-}_{001}	6^{-}_{001}	3^{+}_{001}	6^{+}_{001}	2_{001}	1	3^{-}_{001}

No. 24　D_6　622　[hexagonal] tag = "D6"

* generator : $3^+_{001},\ 2_{001},\ 2_{110}$

* conjugacy class

[1] = 1

[2_{001}] = 2_{001}

[2_{100}] = $2_{100},\ 2_{010},\ 2_{110}$

[2_{120}] = $2_{120},\ 2_{210},\ 2_{1-10}$

[3^+_{001}] = $3^+_{001},\ 3^-_{001}$

[6^+_{001}] = $6^+_{001},\ 6^-_{001}$

* symmetry operation

① 1　② 2_{001}　③ 2_{100}　④ 2_{010}　⑤ 2_{110}　⑥ 2_{120}　⑦ 2_{210}　⑧ 2_{1-10}　⑨ 3^+_{001}　⑩ 3^-_{001}

⑪ 6^+_{001}　⑫ 6^-_{001}

* product table

	1	2_{001}	2_{100}	2_{010}	2_{110}	2_{120}	2_{210}	2_{1-10}	3^+_{001}	3^-_{001}	6^+_{001}	6^-_{001}
1	1	2_{001}	2_{100}	2_{010}	2_{110}	2_{120}	2_{210}	2_{1-10}	3^+_{001}	3^-_{001}	6^+_{001}	6^-_{001}
2_{001}	2_{001}	1	2_{120}	2_{210}	2_{1-10}	2_{100}	2_{010}	2_{110}	6^-_{001}	6^+_{001}	3^-_{001}	3^+_{001}
2_{100}	2_{100}	2_{120}	1	3^+_{001}	3^-_{001}	2_{001}	6^-_{001}	6^+_{001}	2_{010}	2_{110}	2_{1-10}	2_{210}
2_{010}	2_{010}	2_{210}	3^-_{001}	1	3^+_{001}	6^+_{001}	2_{001}	6^-_{001}	2_{110}	2_{100}	2_{120}	2_{1-10}
2_{110}	2_{110}	2_{1-10}	3^+_{001}	3^-_{001}	1	6^-_{001}	6^+_{001}	2_{001}	2_{100}	2_{010}	2_{210}	2_{120}
2_{120}	2_{120}	2_{100}	2_{001}	6^-_{001}	6^+_{001}	1	3^+_{001}	3^-_{001}	2_{210}	2_{1-10}	2_{110}	2_{010}
2_{210}	2_{210}	2_{010}	6^+_{001}	2_{001}	6^-_{001}	3^-_{001}	1	3^+_{001}	2_{1-10}	2_{120}	2_{100}	2_{110}
2_{1-10}	2_{1-10}	2_{110}	6^-_{001}	6^+_{001}	2_{001}	3^+_{001}	3^-_{001}	1	2_{120}	2_{210}	2_{010}	2_{100}
3^+_{001}	3^+_{001}	6^-_{001}	2_{110}	2_{100}	2_{010}	2_{1-10}	2_{120}	2_{210}	3^-_{001}	1	2_{001}	6^+_{001}
3^-_{001}	3^-_{001}	6^+_{001}	2_{010}	2_{110}	2_{100}	2_{210}	2_{1-10}	2_{120}	1	3^+_{001}	6^-_{001}	2_{001}
6^+_{001}	6^+_{001}	3^-_{001}	2_{210}	2_{1-10}	2_{120}	2_{010}	2_{110}	2_{100}	2_{001}	6^-_{001}	3^+_{001}	1
6^-_{001}	6^-_{001}	3^+_{001}	2_{1-10}	2_{120}	2_{210}	2_{110}	2_{100}	2_{010}	6^+_{001}	2_{001}	1	3^-_{001}

No. 25 C_{6v} $6mm$ [hexagonal] tag = "C6v"

* generator : 3^{+}_{001}, 2_{001}, m_{110}

* conjugacy class

[1] = 1

[2_{001}] = 2_{001}

[3^{+}_{001}] = 3^{+}_{001}, 3^{-}_{001}

[6^{+}_{001}] = 6^{+}_{001}, 6^{-}_{001}

[m_{100}] = m_{100}, m_{010}, m_{110}

[m_{120}] = m_{120}, m_{210}, m_{1-10}

* symmetry operation

① 1 ② 2_{001} ③ 3^{+}_{001} ④ 3^{-}_{001} ⑤ 6^{+}_{001} ⑥ 6^{-}_{001} ⑦ m_{100} ⑧ m_{010} ⑨ m_{110} ⑩ m_{120}
⑪ m_{210} ⑫ m_{1-10}

* product table

	1	2_{001}	3^{+}_{001}	3^{-}_{001}	6^{+}_{001}	6^{-}_{001}	m_{100}	m_{010}	m_{110}	m_{120}	m_{210}	m_{1-10}
1	1	2_{001}	3^{+}_{001}	3^{-}_{001}	6^{+}_{001}	6^{-}_{001}	m_{100}	m_{010}	m_{110}	m_{120}	m_{210}	m_{1-10}
2_{001}	2_{001}	1	6^{-}_{001}	6^{+}_{001}	3^{-}_{001}	3^{+}_{001}	m_{120}	m_{210}	m_{1-10}	m_{100}	m_{010}	m_{110}
3^{+}_{001}	3^{+}_{001}	6^{-}_{001}	3^{-}_{001}	1	2_{001}	6^{+}_{001}	m_{110}	m_{100}	m_{010}	m_{1-10}	m_{120}	m_{210}
3^{-}_{001}	3^{-}_{001}	6^{+}_{001}	1	3^{+}_{001}	6^{-}_{001}	2_{001}	m_{010}	m_{110}	m_{100}	m_{210}	m_{1-10}	m_{120}
6^{+}_{001}	6^{+}_{001}	3^{-}_{001}	2_{001}	6^{-}_{001}	3^{+}_{001}	1	m_{210}	m_{1-10}	m_{120}	m_{010}	m_{110}	m_{100}
6^{-}_{001}	6^{-}_{001}	3^{+}_{001}	6^{+}_{001}	2_{001}	1	3^{-}_{001}	m_{1-10}	m_{120}	m_{210}	m_{110}	m_{100}	m_{010}
m_{100}	m_{100}	m_{120}	m_{010}	m_{110}	m_{1-10}	m_{210}	1	3^{+}_{001}	3^{-}_{001}	2_{001}	6^{-}_{001}	6^{+}_{001}
m_{010}	m_{010}	m_{210}	m_{110}	m_{100}	m_{120}	m_{1-10}	3^{-}_{001}	1	3^{+}_{001}	6^{+}_{001}	2_{001}	6^{-}_{001}
m_{110}	m_{110}	m_{1-10}	m_{100}	m_{010}	m_{210}	m_{120}	3^{+}_{001}	3^{-}_{001}	1	6^{-}_{001}	6^{+}_{001}	2_{001}
m_{120}	m_{120}	m_{100}	m_{210}	m_{1-10}	m_{110}	m_{010}	2_{001}	6^{-}_{001}	6^{+}_{001}	1	3^{+}_{001}	3^{-}_{001}
m_{210}	m_{210}	m_{010}	m_{1-10}	m_{120}	m_{100}	m_{110}	6^{+}_{001}	2_{001}	6^{-}_{001}	3^{-}_{001}	1	3^{+}_{001}
m_{1-10}	m_{1-10}	m_{110}	m_{120}	m_{210}	m_{010}	m_{100}	6^{-}_{001}	6^{+}_{001}	2_{001}	3^{+}_{001}	3^{-}_{001}	1

No. 26 D_{3h} $-6m2$ (-6m2 setting) [hexagonal] tag = "D3h"

* generator : 3^{+}_{001}, m_{001}, m_{110}

* conjugacy class

[1] = 1

[2_{120}] = 2_{120}, 2_{210}, 2_{1-10}

[3^{+}_{001}] = 3^{+}_{001}, 3^{-}_{001}

[m_{100}] = m_{100}, m_{010}, m_{110}

[m_{001}] = m_{001}

[-6^{+}_{001}] = -6^{+}_{001}, -6^{-}_{001}

* symmetry operation

① 1 ② 2_{120} ③ 2_{210} ④ 2_{1-10} ⑤ 3^{+}_{001} ⑥ 3^{-}_{001} ⑦ m_{100} ⑧ m_{010} ⑨ m_{110} ⑩ m_{001}

⑪ -6^{+}_{001} ⑫ -6^{-}_{001}

* product table

	1	2_{120}	2_{210}	2_{1-10}	3^{+}_{001}	3^{-}_{001}	m_{100}	m_{010}	m_{110}	m_{001}	-6^{+}_{001}	-6^{-}_{001}
1	1	2_{120}	2_{210}	2_{1-10}	3^{+}_{001}	3^{-}_{001}	m_{100}	m_{010}	m_{110}	m_{001}	-6^{+}_{001}	-6^{-}_{001}
2_{120}	2_{120}	1	3^{+}_{001}	3^{-}_{001}	2_{210}	2_{1-10}	m_{001}	-6^{-}_{001}	-6^{+}_{001}	m_{100}	m_{110}	m_{010}
2_{210}	2_{210}	3^{-}_{001}	1	3^{+}_{001}	2_{1-10}	2_{120}	-6^{+}_{001}	m_{001}	-6^{-}_{001}	m_{010}	m_{100}	m_{110}
2_{1-10}	2_{1-10}	3^{+}_{001}	3^{-}_{001}	1	2_{120}	2_{210}	-6^{-}_{001}	-6^{+}_{001}	m_{001}	m_{110}	m_{010}	m_{100}
3^{+}_{001}	3^{+}_{001}	2_{1-10}	2_{120}	2_{210}	3^{-}_{001}	1	m_{110}	m_{100}	m_{010}	-6^{-}_{001}	m_{001}	-6^{+}_{001}
3^{-}_{001}	3^{-}_{001}	2_{210}	2_{1-10}	2_{120}	1	3^{+}_{001}	m_{010}	m_{110}	m_{100}	-6^{+}_{001}	-6^{-}_{001}	m_{001}
m_{100}	m_{100}	m_{001}	-6^{-}_{001}	-6^{+}_{001}	m_{010}	m_{110}	1	3^{+}_{001}	3^{-}_{001}	2_{120}	2_{1-10}	2_{210}
m_{010}	m_{010}	-6^{+}_{001}	m_{001}	-6^{-}_{001}	m_{110}	m_{100}	3^{-}_{001}	1	3^{+}_{001}	2_{210}	2_{120}	2_{1-10}
m_{110}	m_{110}	-6^{-}_{001}	-6^{+}_{001}	m_{001}	m_{100}	m_{010}	3^{+}_{001}	3^{-}_{001}	1	2_{1-10}	2_{210}	2_{120}
m_{001}	m_{001}	m_{100}	m_{010}	m_{110}	-6^{-}_{001}	-6^{+}_{001}	2_{120}	2_{210}	2_{1-10}	1	3^{-}_{001}	3^{+}_{001}
-6^{+}_{001}	-6^{+}_{001}	m_{010}	m_{110}	m_{100}	m_{001}	-6^{-}_{001}	2_{210}	2_{1-10}	2_{120}	3^{-}_{001}	3^{+}_{001}	1
-6^{-}_{001}	-6^{-}_{001}	m_{110}	m_{100}	m_{010}	-6^{+}_{001}	m_{001}	2_{1-10}	2_{120}	2_{210}	3^{+}_{001}	1	3^{-}_{001}

No. 26 $D_{3h}-1$ $-62m$ (-62m setting) [hexagonal] tag = "D3h-1"

* generator : 3^{+}_{001}, m_{001}, 2_{110}

* conjugacy class

[1] = 1

[2_{100}] = 2_{100}, 2_{010}, 2_{110}

[3^{+}_{001}] = 3^{+}_{001}, 3^{-}_{001}

[m_{001}] = m_{001}

[m_{120}] = m_{120}, m_{210}, m_{1-10}

[-6^{+}_{001}] = -6^{+}_{001}, -6^{-}_{001}

* symmetry operation

① 1 ② 2_{100} ③ 2_{010} ④ 2_{110} ⑤ 3^{+}_{001} ⑥ 3^{-}_{001} ⑦ m_{001} ⑧ m_{120} ⑨ m_{210} ⑩ m_{1-10}

⑪ -6^{+}_{001} ⑫ -6^{-}_{001}

* product table

	1	2_{100}	2_{010}	2_{110}	3^{+}_{001}	3^{-}_{001}	m_{001}	m_{120}	m_{210}	m_{1-10}	-6^{+}_{001}	-6^{-}_{001}
1	1	2_{100}	2_{010}	2_{110}	3^{+}_{001}	3^{-}_{001}	m_{001}	m_{120}	m_{210}	m_{1-10}	-6^{+}_{001}	-6^{-}_{001}
2_{100}	2_{100}	1	3^{+}_{001}	3^{-}_{001}	2_{010}	2_{110}	m_{120}	m_{001}	-6^{-}_{001}	-6^{+}_{001}	m_{1-10}	m_{210}
2_{010}	2_{010}	3^{-}_{001}	1	3^{+}_{001}	2_{110}	2_{100}	m_{210}	-6^{+}_{001}	m_{001}	-6^{-}_{001}	m_{120}	m_{1-10}
2_{110}	2_{110}	3^{+}_{001}	3^{-}_{001}	1	2_{100}	2_{010}	m_{1-10}	-6^{-}_{001}	-6^{+}_{001}	m_{001}	m_{210}	m_{120}
3^{+}_{001}	3^{+}_{001}	2_{110}	2_{100}	2_{010}	3^{-}_{001}	1	-6^{-}_{001}	m_{1-10}	m_{120}	m_{210}	m_{001}	-6^{+}_{001}
3^{-}_{001}	3^{-}_{001}	2_{010}	2_{110}	2_{100}	1	3^{+}_{001}	-6^{+}_{001}	m_{210}	m_{1-10}	m_{120}	-6^{-}_{001}	m_{001}
m_{001}	m_{001}	m_{120}	m_{210}	m_{1-10}	-6^{-}_{001}	-6^{+}_{001}	1	2_{100}	2_{010}	2_{110}	3^{-}_{001}	3^{+}_{001}
m_{120}	m_{120}	m_{001}	-6^{-}_{001}	-6^{+}_{001}	m_{210}	m_{1-10}	2_{100}	1	3^{+}_{001}	3^{-}_{001}	2_{110}	2_{010}
m_{210}	m_{210}	-6^{+}_{001}	m_{001}	-6^{-}_{001}	m_{1-10}	m_{120}	2_{010}	3^{-}_{001}	1	3^{+}_{001}	2_{100}	2_{110}
m_{1-10}	m_{1-10}	-6^{-}_{001}	-6^{+}_{001}	m_{001}	m_{120}	m_{210}	2_{110}	3^{+}_{001}	3^{-}_{001}	1	2_{010}	2_{100}
-6^{+}_{001}	-6^{+}_{001}	m_{210}	m_{1-10}	m_{120}	m_{001}	-6^{-}_{001}	3^{-}_{001}	2_{010}	2_{110}	2_{100}	3^{+}_{001}	1
-6^{-}_{001}	-6^{-}_{001}	m_{1-10}	m_{120}	m_{210}	-6^{+}_{001}	m_{001}	3^{+}_{001}	2_{110}	2_{100}	2_{010}	1	3^{-}_{001}

No. 27 D_{6h} $6/mmm$ [hexagonal] tag = "D6h"

* generator : $3^+_{001},\ 2_{001},\ 2_{110},\ -1$

* conjugacy class

[1] = 1

[2_{001}] = 2_{001}

[2_{100}] = $2_{100},\ 2_{010},\ 2_{110}$

[2_{120}] = $2_{120},\ 2_{210},\ 2_{1-10}$

[3^+_{001}] = $3^+_{001},\ 3^-_{001}$

[6^+_{001}] = $6^+_{001},\ 6^-_{001}$

[-1] = -1

[m_{100}] = $m_{100},\ m_{010},\ m_{110}$

[m_{001}] = m_{001}

[m_{120}] = $m_{120},\ m_{210},\ m_{1-10}$

[-3^+_{001}] = $-3^+_{001},\ -3^-_{001}$

[-6^+_{001}] = $-6^+_{001},\ -6^-_{001}$

* symmetry operation

①	1	②	2_{001}	③	2_{100}	④	2_{010}	⑤	2_{110}	⑥	2_{120}	⑦	2_{210}	⑧	2_{1-10}	⑨	3^+_{001}	⑩	3^-_{001}
⑪	6^+_{001}	⑫	6^-_{001}	⑬	-1	⑭	m_{100}	⑮	m_{010}	⑯	m_{110}	⑰	m_{001}	⑱	m_{120}	⑲	m_{210}	⑳	m_{1-10}
㉑	-3^+_{001}	㉒	-3^-_{001}	㉓	-6^+_{001}	㉔	-6^-_{001}												

* product table omitted because of large table.

No. 28　T　23　[cubic] tag = "T"

* generator : $2_{001},\ 2_{010},\ 3^{+}_{111}$

* conjugacy class

$[\ 1\ ] = \quad 1$

$[\ 2_{001}\ ] = \quad 2_{001},\ 2_{100},\ 2_{010}$

$[\ 3^{+}_{111}\ ] = \quad 3^{+}_{111},\ 3^{+}_{1-1-1},\ 3^{+}_{-11-1},\ 3^{+}_{-1-11}$

$[\ 3^{-}_{111}\ ] = \quad 3^{-}_{111},\ 3^{-}_{1-1-1},\ 3^{-}_{-11-1},\ 3^{-}_{-1-11}$

* symmetry operation

① 1　② 2_{001}　③ 2_{100}　④ 2_{010}　⑤ 3^{+}_{111}　⑥ 3^{+}_{1-1-1}　⑦ 3^{+}_{-11-1}　⑧ 3^{+}_{-1-11}　⑨ 3^{-}_{111}　⑩ 3^{-}_{1-1-1}

⑪ 3^{-}_{-11-1}　⑫ 3^{-}_{-1-11}

* product table

	1	2_{001}	2_{100}	2_{010}	3^+_{111}	3^+_{1-1-1}	3^+_{-11-1}	3^+_{-1-11}	3^-_{111}	3^-_{1-1-1}	3^-_{-11-1}	3^-_{-1-11}
1	1	2_{001}	2_{100}	2_{010}	3^+_{111}	3^+_{1-1-1}	3^+_{-11-1}	3^+_{-1-11}	3^-_{111}	3^-_{1-1-1}	3^-_{-11-1}	3^-_{-1-11}
2_{001}	2_{001}	1	2_{010}	2_{100}	3^+_{1-1-1}	3^+_{111}	3^+_{-1-11}	3^+_{-11-1}	3^-_{-11-1}	3^-_{-1-11}	3^-_{111}	3^-_{1-1-1}
2_{100}	2_{100}	2_{010}	1	2_{001}	3^+_{-11-1}	3^+_{-1-11}	3^+_{111}	3^+_{1-1-1}	3^-_{-1-11}	3^-_{-11-1}	3^-_{1-1-1}	3^-_{111}
2_{010}	2_{010}	2_{100}	2_{001}	1	3^+_{-1-11}	3^+_{-11-1}	3^+_{1-1-1}	3^+_{111}	3^-_{1-1-1}	3^-_{111}	3^-_{-1-11}	3^-_{-11-1}
3^+_{111}	3^+_{111}	3^+_{-11-1}	3^+_{-1-11}	3^+_{1-1-1}	3^-_{111}	3^-_{-1-11}	3^-_{1-1-1}	3^-_{-11-1}	1	2_{001}	2_{100}	2_{010}
3^+_{1-1-1}	3^+_{1-1-1}	3^+_{-1-11}	3^+_{-11-1}	3^+_{111}	3^-_{-11-1}	3^-_{1-1-1}	3^-_{-1-11}	3^-_{111}	2_{001}	1	2_{010}	2_{100}
3^+_{-11-1}	3^+_{-11-1}	3^+_{111}	3^+_{1-1-1}	3^+_{-1-11}	3^-_{-1-11}	3^-_{111}	3^-_{-11-1}	3^-_{1-1-1}	2_{100}	2_{010}	1	2_{001}
3^+_{-1-11}	3^+_{-1-11}	3^+_{1-1-1}	3^+_{111}	3^+_{-11-1}	3^-_{1-1-1}	3^-_{-11-1}	3^-_{111}	3^-_{-1-11}	2_{010}	2_{100}	2_{001}	1
3^-_{111}	3^-_{111}	3^-_{1-1-1}	3^-_{-11-1}	3^-_{-1-11}	1	2_{010}	2_{001}	2_{100}	3^+_{111}	3^+_{-11-1}	3^+_{-1-11}	3^+_{1-1-1}
3^-_{1-1-1}	3^-_{1-1-1}	3^-_{111}	3^-_{-1-11}	3^-_{-11-1}	2_{010}	1	2_{100}	2_{001}	3^+_{-1-11}	3^+_{1-1-1}	3^+_{111}	3^+_{-11-1}
3^-_{-11-1}	3^-_{-11-1}	3^-_{-1-11}	3^-_{111}	3^-_{1-1-1}	2_{001}	2_{100}	1	2_{010}	3^+_{1-1-1}	3^+_{-1-11}	3^+_{-11-1}	3^+_{111}
3^-_{-1-11}	3^-_{-1-11}	3^-_{-11-1}	3^-_{1-1-1}	3^-_{111}	2_{100}	2_{001}	2_{010}	1	3^+_{-11-1}	3^+_{111}	3^+_{1-1-1}	3^+_{-1-11}

No. 29 T_h $m-3$ [cubic] tag = "Th"

* generator : $2_{001},\ 2_{010},\ 3^{+}_{111},\ -1$

* conjugacy class

$[\ 1\ ] = \quad 1$

$[\ 2_{001}\ ] = \quad 2_{001},\ 2_{100},\ 2_{010}$

$[\ 3^{+}_{111}\ ] = \quad 3^{+}_{111},\ 3^{+}_{1-1-1},\ 3^{+}_{-11-1},\ 3^{+}_{-1-11}$

$[\ 3^{-}_{111}\ ] = \quad 3^{-}_{111},\ 3^{-}_{1-1-1},\ 3^{-}_{-11-1},\ 3^{-}_{-1-11}$

$[\ -1\ ] = \quad -1$

$[\ \mathrm{m}_{001}\ ] = \quad \mathrm{m}_{001},\ \mathrm{m}_{100},\ \mathrm{m}_{010}$

$[\ -3^{+}_{111}\ ] = \quad -3^{+}_{111},\ -3^{+}_{1-1-1},\ -3^{+}_{-11-1},\ -3^{+}_{-1-11}$

$[\ -3^{-}_{111}\ ] = \quad -3^{-}_{111},\ -3^{-}_{1-1-1},\ -3^{-}_{-11-1},\ -3^{-}_{-1-11}$

* symmetry operation

①	1	②	2_{001}	③	2_{100}	④	2_{010}	⑤	3^{+}_{111}	⑥	3^{+}_{1-1-1}	⑦	3^{+}_{-11-1}	⑧	3^{+}_{-1-11}	⑨	3^{-}_{111}	⑩	3^{-}_{1-1-1}
⑪	3^{-}_{-11-1}	⑫	3^{-}_{-1-11}	⑬	-1	⑭	m_{001}	⑮	m_{100}	⑯	m_{010}	⑰	-3^{+}_{111}	⑱	-3^{+}_{1-1-1}	⑲	-3^{+}_{-11-1}	⑳	-3^{+}_{-1-11}
㉑	-3^{-}_{111}	㉒	-3^{-}_{1-1-1}	㉓	-3^{-}_{-11-1}	㉔	-3^{-}_{-1-11}												

* product table omitted because of large table.

No. 30 O 432 [cubic] tag = "0"

* generator : $2_{001},\ 2_{010},\ 3^{+}_{111},\ 2_{110}$

* conjugacy class

$[\ 1\ ] = \quad 1$

$[\ 2_{001}\ ] = \quad 2_{001},\ 2_{100},\ 2_{010}$

$[\ 2_{110}\ ] = \quad 2_{110},\ 2_{101},\ 2_{011},\ 2_{1-10},\ 2_{-101},\ 2_{01-1}$

$[\ 3^{+}_{111}\ ] = \quad 3^{+}_{111},\ 3^{+}_{1-1-1},\ 3^{+}_{-11-1},\ 3^{+}_{-1-11},\ 3^{-}_{111},\ 3^{-}_{1-1-1},\ 3^{-}_{-11-1},\ 3^{-}_{-1-11}$

$[\ 4^{+}_{001}\ ] = \quad 4^{+}_{001},\ 4^{+}_{100},\ 4^{+}_{010},\ 4^{-}_{001},\ 4^{-}_{100},\ 4^{-}_{010}$

* symmetry operation

①	1	②	2_{001}	③	2_{100}	④	2_{010}	⑤	2_{110}	⑥	2_{101}	⑦	2_{011}	⑧	2_{1-10}	⑨	2_{-101}	⑩	2_{01-1}
⑪	3^{+}_{111}	⑫	3^{+}_{1-1-1}	⑬	3^{+}_{-11-1}	⑭	3^{+}_{-1-11}	⑮	3^{-}_{111}	⑯	3^{-}_{1-1-1}	⑰	3^{-}_{-11-1}	⑱	3^{-}_{-1-11}	⑲	4^{+}_{001}	⑳	4^{+}_{100}
㉑	4^{+}_{010}	㉒	4^{-}_{001}	㉓	4^{-}_{100}	㉔	4^{-}_{010}												

* product table omitted because of large table.

No. 31 T_d $-43m$ [cubic] tag = "Td"

* generator : $2_{001},\ 2_{010},\ 3^{+}_{111},\ \mathrm{m}_{1-10}$

* conjugacy class

[1] = 1

[2_{001}] = $2_{001},\ 2_{100},\ 2_{010}$

[3^{+}_{111}] = $3^{+}_{111},\ 3^{+}_{1-1-1},\ 3^{+}_{-11-1},\ 3^{+}_{-1-11},\ 3^{-}_{111},\ 3^{-}_{1-1-1},\ 3^{-}_{-11-1},\ 3^{-}_{-1-11}$

[m_{110}] = $\mathrm{m}_{110},\ \mathrm{m}_{101},\ \mathrm{m}_{011},\ \mathrm{m}_{1-10},\ \mathrm{m}_{-101},\ \mathrm{m}_{01-1}$

[-4^{+}_{001}] = $-4^{+}_{001},\ -4^{+}_{100},\ -4^{+}_{010},\ -4^{-}_{001},\ -4^{-}_{100},\ -4^{-}_{010}$

* symmetry operation

①	1	②	2_{001}	③	2_{100}	④	2_{010}	⑤	3^{+}_{111}	⑥	3^{+}_{1-1-1}	⑦	3^{+}_{-11-1}	⑧	3^{+}_{-1-11}	⑨	3^{-}_{111}	⑩	3^{-}_{1-1-1}
⑪	3^{-}_{-11-1}	⑫	3^{-}_{-1-11}	⑬	m_{110}	⑭	m_{101}	⑮	m_{011}	⑯	m_{1-10}	⑰	m_{-101}	⑱	m_{01-1}	⑲	-4^{+}_{001}	⑳	-4^{+}_{100}
㉑	-4^{+}_{010}	㉒	-4^{-}_{001}	㉓	-4^{-}_{100}	㉔	-4^{-}_{010}												

* product table omitted because of large table.

No. 32 O_h $m-3m$ [cubic] tag = "Oh"

* generator : $2_{001},\ 2_{010},\ 3^+_{111},\ 2_{110},\ -1$

* conjugacy class

$[\ 1\ ] = \quad 1$

$[\ 2_{001}\ ] = \quad 2_{001},\ 2_{100},\ 2_{010}$

$[\ 2_{110}\ ] = \quad 2_{110},\ 2_{101},\ 2_{011},\ 2_{1-10},\ 2_{-101},\ 2_{01-1}$

$[\ 3^+_{111}\ ] = \quad 3^+_{111},\ 3^+_{1-1-1},\ 3^+_{-11-1},\ 3^+_{-1-11},\ 3^-_{111},\ 3^-_{1-1-1},\ 3^-_{-11-1},\ 3^-_{-1-11}$

$[\ 4^+_{001}\ ] = \quad 4^+_{001},\ 4^+_{100},\ 4^+_{010},\ 4^-_{001},\ 4^-_{100},\ 4^-_{010}$

$[\ -1\ ] = \quad -1$

$[\ \mathrm{m}_{001}\ ] = \quad \mathrm{m}_{001},\ \mathrm{m}_{100},\ \mathrm{m}_{010}$

$[\ \mathrm{m}_{110}\ ] = \quad \mathrm{m}_{110},\ \mathrm{m}_{101},\ \mathrm{m}_{011},\ \mathrm{m}_{1-10},\ \mathrm{m}_{-101},\ \mathrm{m}_{01-1}$

$[\ -3^+_{111}\ ] = \quad -3^+_{111},\ -3^+_{1-1-1},\ -3^+_{-11-1},\ -3^+_{-1-11},\ -3^-_{111},\ -3^-_{1-1-1},\ -3^-_{-11-1},\ -3^-_{-1-11}$

$[\ -4^+_{001}\ ] = \quad -4^+_{001},\ -4^+_{100},\ -4^+_{010},\ -4^-_{001},\ -4^-_{100},\ -4^-_{010}$

* symmetry operation

①	1	②	2_{001}	③	2_{100}	④	2_{010}	⑤	2_{110}	⑥	2_{101}	⑦	2_{011}	⑧	2_{1-10}	⑨	2_{-101}	⑩	2_{01-1}
⑪	3^+_{111}	⑫	3^+_{1-1-1}	⑬	3^+_{-11-1}	⑭	3^+_{-1-11}	⑮	3^-_{111}	⑯	3^-_{1-1-1}	⑰	3^-_{-11-1}	⑱	3^-_{-1-11}	⑲	4^+_{001}	⑳	4^+_{100}
㉑	4^+_{010}	㉒	4^-_{001}	㉓	4^-_{100}	㉔	4^-_{010}	㉕	-1	㉖	m_{001}	㉗	m_{100}	㉘	m_{010}	㉙	m_{110}	㉚	m_{101}
㉛	m_{011}	㉜	m_{1-10}	㉝	m_{-101}	㉞	m_{01-1}	㉟	-3^+_{111}	㊱	-3^+_{1-1-1}	㊲	-3^+_{-11-1}	㊳	-3^+_{-1-11}	㊴	-3^-_{111}	㊵	-3^-_{1-1-1}
㊶	-3^-_{-11-1}	㊷	-3^-_{-1-11}	㊸	-4^+_{001}	㊹	-4^+_{100}	㊺	-4^+_{010}	㊻	-4^-_{001}	㊼	-4^-_{100}	㊽	-4^-_{010}				

* product table omitted because of large table.