

1 Character table

$X(D_{4h}, 4/mmm)$	E	$C2X$	$2C2Y$	$2C2D$	$2C4X+$
1	2	2	0	0	0
2	2	2	0	0	0
3	2	-2	0	2	0
4	2	-2	0	-2	0
	IE	$IC2X$	$2IC2Y$	$2IC2D$	$2IC4X+$
1	0	0	0	2	0
2	0	0	0	-2	0
3	0	0	0	0	0
4	0	0	0	0	0

Class	Operator
E	E
C2X	C2X
2C2Y	C2Y,C2Z
2C2D	C2D,C2F
2C4X+	C4X+,C4X-
IE	IE
IC2X	IC2X
2IC2Y	IC2Y,IC2Z
2IC2D	IC2D,IC2F
2IC4X+	IC4X+,IC4X-

$\Delta(C_{4v}, 4mm)$	E	$C2X$	$2C4X+$	$2IC2Y$	$2IC2D$
$1(A_1)$	1	1	1	1	1
$2(A_2)$	1	1	1	-1	-1
$3(B_1)$	1	1	-1	1	-1
$4(B_2)$	1	1	-1	-1	1
$5(E)$	2	-2	0	0	0

Class	Operator
E	E
C2X	C2X
2C4X+	C4X+,C4X-
2IC2Y	IC2Y,IC2Z
2IC2D	IC2D,IC2F

$\Gamma(O_h, m-3m)$	E	$3C2X$	$8C31+$	$6C2A$	$6C4X+$
$1^+(A_{1g})$	1	1	1	1	1
$1^-(A_{1u})$	1	1	1	1	1
$2^+(A_{2g})$	1	1	1	-1	-1
$2^-(A_{2u})$	1	1	1	-1	-1
$3^+(T_{1g})$	3	-1	0	-1	1
$3^-(T_{1u})$	3	-1	0	-1	1
$4^+(T_{2g})$	3	-1	0	1	-1
$4^-(T_{2u})$	3	-1	0	1	-1
$5^+(E_g)$	2	2	-1	0	0
$5^-(E_u)$	2	2	-1	0	0
	IE	$3IC2X$	$8IC31+$	$6IC2A$	$6IC4X+$
$1^+(A_{1g})$	1	1	1	1	1
$1^-(A_{1u})$	-1	-1	-1	-1	-1
$2^+(A_{2g})$	1	1	1	-1	-1
$2^-(A_{2u})$	-1	-1	-1	1	1
$3^+(T_{1g})$	3	-1	0	-1	1
$3^-(T_{1u})$	-3	1	0	1	-1
$4^+(T_{2g})$	3	-1	0	1	-1
$4^-(T_{2u})$	-3	1	0	-1	1
$5^+(E_g)$	2	2	-1	0	0
$5^-(E_u)$	-2	-2	1	0	0
Class	Operator				
E	E				
3C2X	C2X,C2Y,C2Z				
8C31+	C31+,C33+,C34+,C32+,C32-,C31-,C34-,C33-				
6C2A	C2A,C2B,C2D,C2F,C2C,C2E				
6C4X+	C4X+,C4X-,C4Y+,C4Y-,C4Z+,C4Z-				
IE	IE				
3IC2X	IC2X,IC2Y,IC2Z				
8IC31+	IC31+,IC33+,IC34+,IC32+,IC32-,IC31-,IC34-,IC33-				
6IC2A	IC2A,IC2B,IC2D,IC2F,IC2C,IC2E				
6IC4X+	IC4X+,IC4X-,IC4Y+,IC4Y-,IC4Z+,IC4Z-				

$\Lambda(C_{3v}, 3m)$	E	$2C31+$	$3IC2B$	Class	Operator
$1(A_1)$	1	1	1	E	E
$2(A_2)$	1	1	-1	2C31+	C31+,C31-
$3(E)$	2	-1	0	3IC2B	IC2B,IC2F,IC2E

$L(D_{3d}, -3m)$	E	$2C_{31+}$	$3C_{2B}$	IE	$2IC_{31+}$	$3IC_{2B}$
$1^+(A_{1g})$	1	1	1	1	1	1
$1^-(A_{1u})$	1	1	1	-1	-1	-1
$2^+(A_{2g})$	1	1	-1	1	1	-1
$2^-(A_{2u})$	1	1	-1	-1	-1	1
$3^+(E_g)$	2	-1	0	2	-1	0
$3^-(E_u)$	2	-1	0	-2	1	0

Class	Operator
E	E
$2C_{31+}$	C_{31+}, C_{31-}
$3C_{2B}$	C_{2B}, C_{2F}, C_{2E}
IE	IE
$2IC_{31+}$	IC_{31+}, IC_{31-}
$3IC_{2B}$	$IC_{2B}, IC_{2F}, IC_{2E}$

$XY(C_s, m)$	E	IC_{2E}	Class	Operator
$1(A')$	1	1	E	E
$2(A'')$	1	-1	IC_{2E}	IC_{2E}

$U(C_{2v}, mm2)$	E	C_{2C}	IC_{2Y}	IC_{2E}	Class	Operator
$1(A_1)$	1	1	1	1	E	E
$2(A_2)$	1	1	-1	-1	C_{2C}	C_{2C}
$3(B_1)$	1	-1	1	-1	IC_{2Y}	IC_{2Y}
$4(B_2)$	1	-1	-1	1	IC_{2E}	IC_{2E}

$S(C_{2v}, mm2)$	E	C_{2C}	IC_{2Y}	IC_{2E}	Class	Operator
$1(A_1)$	1	1	1	1	E	E
$2(A_2)$	1	1	-1	-1	C_{2C}	C_{2C}
$3(B_1)$	1	-1	1	-1	IC_{2Y}	IC_{2Y}
$4(B_2)$	1	-1	-1	1	IC_{2E}	IC_{2E}

2 Compatibility table

		Γ	Δ	Γ	Λ				
		Γ_1^+	Δ_1	Γ_1^+	Λ_1				
		Γ_1^-	Δ_2	Γ_1^-	Λ_2	L	Λ	L	XY
X	Δ	Γ_2^+	Δ_3	Γ_2^+	Λ_2	L_1^+	Λ_1	L_1^+	XY_1
X_1	$\Delta_1 + \Delta_4$	Γ_2^-	Δ_4	Γ_2^-	Λ_1	L_1^-	Λ_2	L_1^-	XY_2
X_2	$\Delta_2 + \Delta_3$	Γ_3^+	$\Delta_2 + \Delta_5$	Γ_3^+	$\Lambda_2 + \Lambda_3$	L_2^+	Λ_2	L_2^+	XY_2
X_3	Δ_5	Γ_3^-	$\Delta_1 + \Delta_5$	Γ_3^-	$\Lambda_1 + \Lambda_3$	L_2^-	Λ_1	L_2^-	XY_1
X_4	Δ_5	Γ_4^+	$\Delta_4 + \Delta_5$	Γ_4^+	$\Lambda_1 + \Lambda_3$	L_3^+	Λ_3	L_3^+	$XY_1 + XY_2$
		Γ_4^-	$\Delta_3 + \Delta_5$	Γ_4^-	$\Lambda_2 + \Lambda_3$	L_3^-	Λ_3	L_3^-	$XY_1 + XY_2$
		Γ_5^+	$\Delta_1 + \Delta_3$	Γ_5^+	Λ_3				
		Γ_5^-	$\Delta_2 + \Delta_4$	Γ_5^-	Λ_3				
U	XY	S	U	U	S				
U_1	XY_1	S_1	U_1	U_1	S_1				
U_2	XY_2	S_2	U_2	U_2	S_2				
U_3	XY_2	S_3	U_3	U_3	S_3				
U_4	XY_1	S_4	U_4	U_4	S_4				