PG No. 23 $C_{6\mathrm{h}}$ $6/m$ [hexagonal]

* character table

$C_{6\mathrm{h}}$	$1(1)$	$2_{001}(1)$	$3^+_{001}(2)$	$6^+_{001}(2)$	$-1(1)$	$\mathrm{m}_{001}(1)$	$-3^+_{001}(2)$	$-6^+_{001}(2)$
A_g	1	1	1	1	1	1	1	1
B_g	1	−1	1	−1	1	−1	1	−1
E_{1g}	2	−2	−1	1	2	−2	−1	1
E_{2g}	2	2	−1	−1	2	2	−1	−1
A_u	1	1	1	1	−1	−1	−1	−1
B_u	1	−1	1	−1	−1	1	−1	1
E_{1u}	2	−2	−1	1	−2	2	1	−1
E_{2u}	2	2	−1	−1	−2	−2	1	1

* polar ↔ axial conversion

A_g (A_u) B_g (B_u) E_{1g} (E_{1u}) E_{2g} (E_{2u}) A_u (A_g) B_u (B_g) E_{1u} (E_{1g}) E_{2u} (E_{2g})

* symmetric product

	A_g	B_g	E_{1g}	E_{2g}	A_u	B_u	E_{1u}	E_{2u}
A_g	A_g	B_g	E_{1g}	E_{2g}	A_u	B_u	E_{1u}	E_{2u}
B_g		A_g	E_{2g}	E_{1g}	B_u	A_u	E_{2u}	E_{1u}
E_{1g}			$A_g + E_{2g}$	$2B_g + E_{1g}$	E_{1u}	E_{2u}	$2A_u + E_{2u}$	$2B_u + E_{1u}$
E_{2g}				$A_g + E_{2g}$	E_{2u}	E_{1u}	$2B_u + E_{1u}$	$2A_u + E_{2u}$
A_u					A_g	B_g	E_{1g}	E_{2g}
B_u						A_g	E_{2g}	E_{1g}
E_{1u}							$A_g + E_{2g}$	$2B_g + E_{1g}$
E_{2u}								$A_g + E_{2g}$

* anti-symmetric product

A_g	B_g	E_{1g}	E_{2g}	A_u	B_u	E_{1u}	E_{2u}
−	−	A_g	A_g	−	−	A_g	A_g