PG No. 45 $C_{6h}(c)$ $6/m$ [hexagonal]

* character table ($\omega = e^{2\pi i/3}$)

$C_{6h}(c)$	$1(1)$	$2_{001}(1)$	$3^+_{001}(1)$	$3^-_{001}(1)$	$6^+_{001}(1)$	$6^-_{001}(1)$	$-1(1)$	$m_{001}(1)$	$-3^+_{001}(1)$	$-3^-_{001}(1)$	$-6^+_{001}(1)$	$-6^-_{001}(1)$
A_g	1	1	1	1	1	1	1	1	1	1	1	1
B_g	1	−1	1	1	−1	−1	1	−1	1	1	−1	−1
$E^{(a)}_{1g}$	1	−1	ω^*	ω	$-\omega$	$-\omega^*$	1	−1	ω^*	ω	$-\omega$	$-\omega^*$
$E^{(b)}_{1g}$	1	−1	ω	ω^*	$-\omega^*$	$-\omega$	1	−1	ω	ω^*	$-\omega^*$	$-\omega$
$E^{(a)}_{2g}$	1	1	ω^*	ω	ω	ω^*	1	1	ω^*	ω	ω	ω^*
$E^{(b)}_{2g}$	1	1	ω	ω^*	ω^*	ω	1	1	ω	ω^*	ω^*	ω
A_u	1	1	1	1	1	1	−1	−1	−1	−1	−1	−1
B_u	1	−1	1	1	−1	−1	−1	1	−1	−1	1	1
$E^{(a)}_{1u}$	1	−1	ω^*	ω	$-\omega$	$-\omega^*$	−1	1	$-\omega^*$	$-\omega$	ω	ω^*
$E^{(b)}_{1u}$	1	−1	ω	ω^*	$-\omega^*$	$-\omega$	−1	1	$-\omega$	$-\omega^*$	ω^*	ω
$E^{(a)}_{2u}$	1	1	ω^*	ω	ω	ω^*	−1	−1	$-\omega^*$	$-\omega$	$-\omega$	$-\omega^*$
$E^{(b)}_{2u}$	1	1	ω	ω^*	ω^*	ω	−1	−1	$-\omega$	$-\omega^*$	$-\omega^*$	$-\omega$

* polar ↔ axial conversion

A_g (A_u) B_g (B_u) $E^{(a)}_{1g}$ ($E^{(a)}_{1u}$) $E^{(b)}_{1g}$ ($E^{(b)}_{1u}$) $E^{(a)}_{2g}$ ($E^{(a)}_{2u}$) $E^{(b)}_{2g}$ ($E^{(b)}_{2u}$) A_u (A_g) B_u (B_g) $E^{(a)}_{1u}$ ($E^{(a)}_{1g}$) $E^{(b)}_{1u}$ ($E^{(b)}_{1g}$) $E^{(a)}_{2u}$ ($E^{(a)}_{2g}$) $E^{(b)}_{2u}$ ($E^{(b)}_{2g}$)

* symmetric product

	A_g	B_g	$E^{(a)}_{1g}$	$E^{(b)}_{1g}$	$E^{(a)}_{2g}$	$E^{(b)}_{2g}$	A_u	B_u	$E^{(a)}_{1u}$	$E^{(b)}_{1u}$	$E^{(a)}_{2u}$	$E^{(b)}_{2u}$
A_g	A_g	B_g	$E^{(a)}_{1g}$	$E^{(b)}_{1g}$	$E^{(a)}_{2g}$	$E^{(b)}_{2g}$	A_u	B_u	$E^{(a)}_{1u}$	$E^{(b)}_{1u}$	$E^{(a)}_{2u}$	$E^{(b)}_{2u}$
B_g		A_g	$E^{(a)}_{2g}$	$E^{(b)}_{2g}$	$E^{(a)}_{1g}$	$E^{(b)}_{1g}$	B_u	A_u	$E^{(a)}_{2u}$	$E^{(b)}_{2u}$	$E^{(a)}_{1u}$	$E^{(b)}_{1u}$
$E^{(a)}_{1g}$			$E^{(b)}_{2g}$	A_g	$E^{(b)}_{1g}$	B_g	$E^{(a)}_{1u}$	$E^{(a)}_{2u}$	$E^{(b)}_{2u}$	A_u	$E^{(b)}_{1u}$	B_u
$E^{(b)}_{1g}$				$E^{(a)}_{2g}$	B_g	$E^{(a)}_{1g}$	$E^{(b)}_{1u}$	$E^{(b)}_{2u}$	A_u	$E^{(a)}_{2u}$	B_u	$E^{(a)}_{1u}$
$E^{(a)}_{2g}$					$E^{(b)}_{2g}$	A_g	$E^{(a)}_{2u}$	$E^{(a)}_{1u}$	$E^{(b)}_{1u}$	B_u	$E^{(b)}_{2u}$	A_u
$E^{(b)}_{2g}$						A_g	$E^{(b)}_{2u}$	$E^{(b)}_{1u}$	B_u	$E^{(a)}_{1u}$	A_u	$E^{(a)}_{2u}$
A_u							A_g	B_g	$E^{(a)}_{1g}$	$E^{(b)}_{1g}$	$E^{(a)}_{2g}$	$E^{(b)}_{2g}$
B_u								A_g	$E^{(a)}_{2g}$	$E^{(b)}_{2g}$	$E^{(a)}_{1g}$	$E^{(b)}_{1g}$
$E^{(a)}_{1u}$									$E^{(b)}_{2g}$	A_g	$E^{(b)}_{1g}$	B_g
$E^{(b)}_{1u}$										$E^{(a)}_{2g}$	B_g	$E^{(a)}_{1g}$
$E^{(a)}_{2u}$											$E^{(b)}_{2g}$	A_g
$E^{(b)}_{2u}$												$E^{(a)}_{2g}$

* anti-symmetric product

A_g	B_g	$E^{(a)}_{1g}$	$E^{(b)}_{1g}$	$E^{(a)}_{2g}$	$E^{(b)}_{2g}$	A_u	B_u	$E^{(a)}_{1u}$	$E^{(b)}_{1u}$	$E^{(a)}_{2u}$	$E^{(b)}_{2u}$
–	–	–	–	–	–	–	–	–	–	–	–