PG No. 42 $C_{3\mathrm{i}}(c)$ $\bar{3}$ [trigonal]

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

$C_{3\mathrm{i}}(c)$	$1(1)$	$3^+_{001}(1)$	$3^-_{001}(1)$	$-1(1)$	$-3^+_{001}(1)$	$-3^-_{001}(1)$
A_g	1	1	1	1	1	1
$E_g^{(a)}$	1	ω^*	ω	1	ω^*	ω
$E_g^{(b)}$	1	ω	ω^*	1	ω	ω^*
A_u	1	1	1	-1	-1	-1
$E_u^{(a)}$	1	ω^*	ω	-1	$-\omega^*$	$-\omega$
$E_u^{(b)}$	1	ω	ω^*	-1	$-\omega$	$-\omega^*$

* polar $\leftrightarrow$ axial conversion

A_g (A_u) $E_g^{(a)}$ ($E_u^{(a)}$) $E_g^{(b)}$ ($E_u^{(b)}$) A_u (A_g) $E_u^{(a)}$ ($E_g^{(a)}$) $E_u^{(b)}$ ($E_g^{(b)}$)

* symmetric product

	A_g	$E_g^{(a)}$	$E_g^{(b)}$	A_u	$E_u^{(a)}$	$E_u^{(b)}$
A_g	A_g	$E_g^{(a)}$	$E_g^{(b)}$	A_u	$E_u^{(a)}$	$E_u^{(b)}$
$E_g^{(a)}$		$E_g^{(b)}$	A_g	$E_u^{(a)}$	$E_u^{(b)}$	A_u
$E_g^{(b)}$			$E_g^{(a)}$	$E_u^{(b)}$	A_u	$E_u^{(a)}$
A_u				A_g	$E_g^{(a)}$	$E_g^{(b)}$
$E_u^{(a)}$					$E_g^{(b)}$	A_g
$E_u^{(b)}$						$E_g^{(a)}$

* anti-symmetric product

A_g	$E_g^{(a)}$	$E_g^{(b)}$	A_u	$E_u^{(a)}$	$E_u^{(b)}$