

PG No. 25 C_{6v} $6mm$ [hexagonal]

* 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

Table 1: Symmetry operations for 3d polar vector.

| No. | tag | matrix (polar) | det |
|-----|-------------|---|-----|
| 1 | 1 | $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ | 1 |
| 2 | 3_{001}^+ | $\begin{bmatrix} 0 & -1 & 0 \\ 1 & -1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ | 1 |
| 3 | 3_{001}^- | $\begin{bmatrix} -1 & 1 & 0 \\ -1 & 0 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ | 1 |
| 4 | 2_{001} | $\begin{bmatrix} -1 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ | 1 |
| 5 | 6_{001}^- | $\begin{bmatrix} 0 & 1 & 0 \\ -1 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ | 1 |
| 6 | 6_{001}^+ | $\begin{bmatrix} 1 & -1 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ | 1 |
| 7 | m_{110} | $\begin{bmatrix} 0 & -1 & 0 \\ -1 & 0 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ | -1 |
| 8 | m_{100} | $\begin{bmatrix} -1 & 1 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ | -1 |
| 9 | m_{010} | $\begin{bmatrix} 1 & 0 & 0 \\ 1 & -1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ | -1 |
| 10 | m_{1-10} | $\begin{bmatrix} 0 & 1 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ | -1 |
| 11 | m_{120} | $\begin{bmatrix} 1 & -1 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ | -1 |

continued ...

Table 1

| No. | tag | matrix (polar) | det |
|-----|-----------|---|-----|
| 12 | m_{210} | $\begin{bmatrix} -1 & 0 & 0 \\ -1 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ | -1 |