MPG No. 26.3.97 $\bar{6}'m'2$ (-6'm'2 setting) [Type III, hexagonal] [Q tensor]

* Rank 0 tensor.

$$[Q]$$

$$Q = Q_s^{(1)}$$

* Rank 1 tensor. * Rank 2 tensor (s).

$$\begin{bmatrix} Q_{xx} & 0 & 0 \\ 0 & Q_{xx} & 0 \\ 0 & 0 & Q_{zz} \end{bmatrix}$$

$$Q_{xx} = -Q_{du}^{(1)} + Q_s^{(1)}$$
$$Q_{zz} = 2Q_{du}^{(1)} + Q_s^{(1)}$$

* Rank 2 tensor (a). * Rank 3 tensor (s).

$$\begin{bmatrix} 0 & Q_{xxy} & 0 \\ 0 & -Q_{xxy} & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ Q_{xxy} & 0 & 0 \end{bmatrix}$$

$$Q_{xxy} = Q_{f1}^{(1)}$$

* Rank 3 tensor (a). * Rank 4 tensor (sss).

$$\begin{bmatrix} Q_{xxxx} & Q_{xxyy} & Q_{xxzz} & 0 & 0 & 0 \\ Q_{xxyy} & Q_{xxxx} & Q_{xxzz} & 0 & 0 & 0 \\ Q_{xxzz} & Q_{xxzz} & Q_{zzzz} & 0 & 0 & 0 \\ 0 & 0 & 0 & Q_{yzyz} & 0 & 0 \\ 0 & 0 & 0 & 0 & Q_{yzyz} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{Q_{xxxx}}{2} - \frac{Q_{xxyy}}{2} \end{bmatrix}$$

$$Q_{xxxx} = -2Q_{du}^{(1)} - 4Q_{du}^{(2)} + 3Q_{g0}^{(1)} + Q_s^{(1)} + 2Q_s^{(2)}$$
$$Q_{xxyy} = -2Q_{du}^{(1)} + Q_{g0}^{(1)} + Q_s^{(1)}$$
$$Q_{xxzz} = Q_{du}^{(1)} - 4Q_{g0}^{(1)} + Q_s^{(1)}$$
$$Q_{zzzz} = 4Q_{du}^{(1)} + 8Q_{du}^{(2)} + 8Q_{g0}^{(1)} + Q_s^{(1)} + 2Q_s^{(2)}$$
$$Q_{yzyz} = Q_{du}^{(2)} - 4Q_{g0}^{(1)} + Q_s^{(2)}$$

* Rank 4 tensor (ssa).

$$\begin{bmatrix} 0 & 0 & Q_{xxzz} & 0 & 0 & 0 \\ 0 & 0 & Q_{xxzz} & 0 & 0 & 0 \\ -Q_{xxzz} & -Q_{xxzz} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$Q_{xxzz} = 3Q_{du}^{(3)}$$

* Rank 4 tensor (aas).

$$\begin{bmatrix} Q_{yzyz} & 0 & 0 \\ 0 & Q_{yzyz} & 0 \\ 0 & 0 & Q_{xyxy} \end{bmatrix}$$

$$Q_{yzyz} = -2Q_{du}^{(4)} + Q_s^{(3)}$$
$$Q_{xyxy} = 4Q_{du}^{(4)} + Q_s^{(3)}$$

* Rank 4 tensor (aaa). * Rank 4 tensor (sa).

$$\begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ Q_{yzyz} & 0 & 0 \\ 0 & -Q_{yzyz} & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

$$Q_{yzyz} = -3Q_{du}^{(5)}$$

* Rank 4 tensor (as).

$$\begin{bmatrix} 0 & 0 & 0 & Q_{yzyz} & 0 & 0 \\ 0 & 0 & 0 & 0 & -Q_{yzyz} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$Q_{yzyz} = -3Q_{du}^{(6)}$$

* Rank 4 tensor (s).

$$\begin{bmatrix} Q_{xxxx} & Q_{xxyy} & Q_{xxzz} & 0 & 0 & 0 & 0 & 0 & 0 \\ Q_{xxyy} & Q_{xxxx} & Q_{xxzz} & 0 & 0 & 0 & 0 & 0 & 0 \\ Q_{zzxx} & Q_{zzxx} & Q_{zzzz} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & Q_{yzyz} & 0 & 0 & Q_{yzzy} & 0 & 0 \\ 0 & 0 & 0 & 0 & Q_{yzzy} & 0 & 0 & Q_{yzyz} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{Q_{xxxx}}{2} - \frac{Q_{xxyy}}{2} & 0 & 0 & \frac{Q_{xxxx}}{2} - \frac{Q_{xxyy}}{2} \end{bmatrix}$$

$$Q_{xxxx} = -2Q_{du}^{(1)} - 4Q_{du}^{(2)} + 3Q_{g0}^{(1)} + Q_s^{(1)} + 2Q_s^{(2)}$$
$$Q_{xxyy} = -2Q_{du}^{(1)} + Q_{g0}^{(1)} + Q_s^{(1)}$$
$$Q_{xxzz} = Q_{du}^{(1)} + 3Q_{du}^{(3)} - 4Q_{g0}^{(1)} + Q_s^{(1)}$$
$$Q_{zzxx} = Q_{du}^{(1)} - 3Q_{du}^{(3)} - 4Q_{g0}^{(1)} + Q_s^{(1)}$$
$$Q_{zzzz} = 4Q_{du}^{(1)} + 8Q_{du}^{(2)} + 8Q_{g0}^{(1)} + Q_s^{(1)} + 2Q_s^{(2)}$$
$$Q_{yzyz} = Q_{du}^{(2)} - 3Q_{du}^{(5)} - 4Q_{g0}^{(1)} + Q_s^{(2)}$$
$$Q_{yzzy} = Q_{du}^{(2)} + 3Q_{du}^{(5)} - 4Q_{g0}^{(1)} + Q_s^{(2)}$$

* Rank 4 tensor (a).

$$\begin{bmatrix} 0 & 0 & 0 & Q_{yzyz} & 0 & 0 & Q_{yzzy} & 0 & 0 \\ 0 & 0 & 0 & 0 & -Q_{yzzy} & 0 & 0 & -Q_{yzyz} & 0 \\ 0 & 0 & 0 & 0 & 0 & Q_{xyxy} & 0 & 0 & -Q_{xyxy} \end{bmatrix}$$

$$Q_{yzyz} = -2Q_{du}^{(4)} - 3Q_{du}^{(6)} + Q_s^{(3)}$$
$$Q_{yzzy} = 2Q_{du}^{(4)} - 3Q_{du}^{(6)} - Q_s^{(3)}$$
$$Q_{xyxy} = 4Q_{du}^{(4)} + Q_s^{(3)}$$

* Rank 4 tensor (t).

$$\begin{bmatrix} Q_{xxxx} & 0 & 0 \\ 0 & Q_{xxxx} & 0 \\ 0 & 0 & Q_{zzzz} \\ 0 & 0 & Q_{yyzz} \\ Q_{zzxx} & 0 & 0 \\ 0 & Q_{xxyy} & 0 \\ 0 & Q_{yzzy} & 0 \\ 0 & 0 & -\frac{Q_{xxxx}}{2} + \frac{3Q_{xxyy}}{2} + Q_{yyzz} - Q_{yzzy} + Q_{zzxx} \\ \frac{Q_{xxxx}}{2} - \frac{Q_{xxyy}}{2} & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

$$Q_{xxxx} = -2Q_{du}^{(1)} - 4Q_{du}^{(2)} + 3Q_{g0}^{(1)} + 3Q_{s}^{(1)}$$
$$Q_{zzzz} = 4Q_{du}^{(1)} + 8Q_{du}^{(2)} + 8Q_{g0}^{(1)} + 3Q_{s}^{(1)}$$
$$Q_{yyzz} = Q_{du}^{(1)} + 3Q_{du}^{(3)} - 4Q_{g0}^{(1)} + Q_{s}^{(1)}$$
$$Q_{zzxx} = Q_{du}^{(1)} - 3Q_{du}^{(3)} - 4Q_{g0}^{(1)} + Q_{s}^{(1)}$$
$$Q_{xxyy} = -2Q_{du}^{(1)} + Q_{g0}^{(1)} + Q_{s}^{(1)}$$
$$Q_{yzzy} = Q_{du}^{(2)} + 3Q_{du}^{(5)} - 4Q_{g0}^{(1)} + Q_{s}^{(1)}$$