MPG No. 34.2.139 321′ (3121' setting) [Type II, trigonal] [G tensor]

* Rank 0 tensor.

$[G]$

$G = G_s^{(1)}$

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

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

$G_{xx} = -G_{du}^{(1)} + G_s^{(1)}$
$G_{zz} = 2G_{du}^{(1)} + G_s^{(1)}$

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

$$\begin{bmatrix} 0 & G_{xxy} & 0 \\ 0 & -G_{xxy} & 0 \\ 0 & 0 & 0 \\ G_{yzx} & 0 & 0 \\ 0 & -G_{yzx} & 0 \\ G_{xxy} & 0 & 0 \end{bmatrix}$$

$G_{xxy} = G_{f1}^{(1)}$
$G_{yzx} = -3Q_{du}^{(1)}$

* Rank 3 tensor (a).

$$\begin{bmatrix} G_{yzx} & 0 & 0 \\ 0 & G_{yzx} & 0 \\ 0 & 0 & G_{xyz} \end{bmatrix}$$

$G_{yzx} = -Q_{du}^{(2)} + Q_s^{(1)}$
$G_{xyz} = 2Q_{du}^{(2)} + Q_s^{(1)}$

* Rank 4 tensor (sss).

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

$G_{xxxx} = -2G_{du}^{(1)} - 4G_{du}^{(2)} + 3G_{g0}^{(1)} + G_s^{(1)} + 2G_s^{(2)}$
$G_{xxyy} = -2G_{du}^{(1)} + G_{g0}^{(1)} + G_s^{(1)}$
$G_{xxzz} = G_{du}^{(1)} - 4G_{g0}^{(1)} + G_s^{(1)}$
$G_{xxzx} = G_{ga}^{(1)}$
$G_{zzzz} = 4G_{du}^{(1)} + 8G_{du}^{(2)} + 8G_{g0}^{(1)} + G_s^{(1)} + 2G_s^{(2)}$
$G_{yzyz} = G_{du}^{(2)} - 4G_{g0}^{(1)} + G_s^{(2)}$

* Rank 4 tensor (ssa).

$$\begin{bmatrix} 0 & 0 & G_{xxzz} & 0 & G_{xxzx} & 0 \\ 0 & 0 & G_{xxzz} & 0 & -G_{xxzx} & 0 \\ -G_{xxzz} & -G_{xxzz} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & G_{xxzx} \\ -G_{xxzx} & G_{xxzx} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -G_{xxzx} & 0 & 0 \end{bmatrix}$$

$G_{xxzz} = 3G_{du}^{(3)}$
$G_{xxzx} = -2Q_{f1}^{(1)}$

* Rank 4 tensor (aas).

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

$G_{yzyz} = -2G_{du}^{(4)} + G_{s}^{(3)}$
$G_{xyxy} = 4G_{du}^{(4)} + G_{s}^{(3)}$

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

$$\begin{bmatrix} 0 & G_{xxzx} & 0 \\ 0 & -G_{xxzx} & 0 \\ 0 & 0 & 0 \\ G_{yzyz} & 0 & 0 \\ 0 & -G_{yzyz} & 0 \\ G_{xxzx} & 0 & 0 \end{bmatrix}$$

$G_{xxzx} = Q_{f1}^{(2)}$
$G_{yzyz} = -3G_{du}^{(5)}$

* Rank 4 tensor (as).

$$\begin{bmatrix} 0 & 0 & 0 & G_{yzyz} & 0 & G_{yzxy} \\ G_{yzxy} & -G_{yzxy} & 0 & 0 & -G_{yzyz} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

$G_{yzyz} = -3G_{du}^{(6)}$
$G_{yzxy} = Q_{f1}^{(3)}$

* Rank 4 tensor (s).

$$\begin{bmatrix} G_{xxxx} & G_{xxyy} & G_{xxzz} & 0 & G_{xxzx} & 0 & 0 & G_{xxxz} & 0 \\ G_{xxyy} & G_{xxxx} & G_{xxzz} & 0 & -G_{xxzx} & 0 & 0 & -G_{xxxz} & 0 \\ G_{zzxx} & G_{zzxx} & G_{zzzz} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & G_{yzyz} & 0 & G_{yzxy} & G_{yzzy} & 0 & G_{yzxy} \\ -G_{yzxy} & G_{yzxy} & 0 & 0 & G_{yzzy} & 0 & 0 & G_{yzyz} & 0 \\ 0 & 0 & 0 & -G_{xxxz} & 0 & \frac{G_{xxxx}}{2} - \frac{G_{xxyy}}{2} & -G_{xxzx} & 0 & \frac{G_{xxxx}}{2} - \frac{G_{xxyy}}{2} \end{bmatrix}$$

$$G_{xxxx} = -2G_{du}^{(1)} - 4G_{du}^{(2)} + 3G_{g0}^{(1)} + G_s^{(1)} + 2G_s^{(2)}$$
$$G_{xxyy} = -2G_{du}^{(1)} + G_{g0}^{(1)} + G_s^{(1)}$$
$$G_{xxzz} = G_{du}^{(1)} + 3G_{du}^{(3)} - 4G_{g0}^{(1)} + G_s^{(1)}$$
$$G_{xxzx} = G_{ga}^{(1)} - 2Q_{f1}^{(1)} + Q_{f1}^{(2)}$$
$$G_{xxxz} = G_{ga}^{(1)} - 2Q_{f1}^{(1)} - Q_{f1}^{(2)}$$
$$G_{zzxx} = G_{du}^{(1)} - 3G_{du}^{(3)} - 4G_{g0}^{(1)} + G_s^{(1)}$$
$$G_{zzzz} = 4G_{du}^{(1)} + 8G_{du}^{(2)} + 8G_{g0}^{(1)} + G_s^{(1)} + 2G_s^{(2)}$$
$$G_{yzyz} = G_{du}^{(2)} - 3G_{du}^{(5)} - 4G_{g0}^{(1)} + G_s^{(2)}$$
$$G_{yzxy} = -G_{ga}^{(1)} - 2Q_{f1}^{(1)}$$
$$G_{yzzy} = G_{du}^{(2)} + 3G_{du}^{(5)} - 4G_{g0}^{(1)} + G_s^{(2)}$$

* Rank 4 tensor (a).

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

$$G_{yzyz} = -2G_{du}^{(4)} - 3G_{du}^{(6)} + G_s^{(3)}$$
$$G_{yzxy} = Q_{f1}^{(3)}$$
$$G_{yzzy} = 2G_{du}^{(4)} - 3G_{du}^{(6)} - G_s^{(3)}$$
$$G_{xyxy} = 4G_{du}^{(4)} + G_s^{(3)}$$

* Rank 4 tensor (t).

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

$$G_{xxxx} = -2G_{du}^{(1)} - 4G_{du}^{(2)} + 3G_{g0}^{(1)} + 3G_s^{(1)}$$
$$G_{xxxz} = G_{ga}^{(1)}$$
$$G_{zzzz} = 4G_{du}^{(1)} + 8G_{du}^{(2)} + 8G_{g0}^{(1)} + 3G_s^{(1)}$$
$$G_{yyzz} = G_{du}^{(1)} + 3G_{du}^{(3)} - 4G_{g0}^{(1)} + G_s^{(1)}$$
$$G_{zzxx} = G_{du}^{(1)} - 3G_{du}^{(3)} - 4G_{g0}^{(1)} + G_s^{(1)}$$
$$G_{xxyy} = -2G_{du}^{(1)} + G_{g0}^{(1)} + G_s^{(1)}$$
$$G_{yzzy} = G_{du}^{(2)} + 3G_{du}^{(5)} - 4G_{g0}^{(1)} + G_s^{(1)}$$