Property		Formulation
$\left(\dfrac{\partial^2 p}{\partial \varrho^2}\right)_T$	$=$	$\dfrac{TR}{\varrho}\left[2\delta\alpha^{\mathrm{r}}_{\delta} + 4\delta^2\alpha^{\mathrm{r}}_{\delta\delta} + \delta^3\alpha^{\mathrm{r}}_{\delta\delta\delta}\right]$
$\left(\dfrac{\partial^2 p}{\partial T^2}\right)_\varrho$	$=$	$\dfrac{\varrho R}{T}\left[\tau^2\delta\alpha^{\mathrm{r}}_{\tau\tau\delta}\right]$
$\left(\dfrac{\partial^2 p}{\partial \varrho\, \partial T}\right)$	$=$	$R\left[1 + 2\delta\alpha^{\mathrm{r}}_{\delta} + \delta^2\alpha^{\mathrm{r}}_{\delta\delta} - 2\delta\tau\alpha^{\mathrm{r}}_{\tau\delta} - \tau\delta^2\alpha^{\mathrm{r}}_{\tau\delta\delta}\right]$
$\left(\dfrac{\partial^2 s}{\partial \varrho^2}\right)_T$	$=$	$\dfrac{R}{\varrho^2}\left[1 - \delta^2\alpha^{\mathrm{r}}_{\delta\delta} + \tau\delta^2\alpha^{\mathrm{r}}_{\tau\delta\delta}\right]$
$\left(\dfrac{\partial^2 s}{\partial T^2}\right)_\varrho$	$=$	$\dfrac{R}{T^2}\left[\tau^3(\alpha^{0}_{\tau\tau\tau} + \alpha^{\mathrm{r}}_{\tau\tau\tau}) + 3\tau^2(\alpha^{0}_{\tau\tau} + \alpha^{\mathrm{r}}_{\tau\tau})\right]$
$\left(\dfrac{\partial^2 s}{\partial \varrho\, \partial T}\right)$	$=$	$\dfrac{R}{T\varrho}\left[-\tau^2\delta\alpha^{\mathrm{r}}_{\tau\tau\delta}\right]$
$\left(\dfrac{\partial^2 u}{\partial \varrho^2}\right)_T$	$=$	$\dfrac{TR}{\varrho^2}\left[\tau\delta^2\alpha^{\mathrm{r}}_{\tau\delta\delta}\right]$
$\left(\dfrac{\partial^2 u}{\partial T^2}\right)_\varrho$	$=$	$\dfrac{R}{T}\left[\tau^3(\alpha^{0}_{\tau\tau\tau} + \alpha^{\mathrm{r}}_{\tau\tau\tau}) + 2\tau^2(\alpha^{0}_{\tau\tau} + \alpha^{\mathrm{r}}_{\tau\tau})\right]$
$\left(\dfrac{\partial^2 u}{\partial \varrho\, \partial T}\right)$	$=$	$\dfrac{R}{\varrho}\left[-\tau^2\delta\alpha^{\mathrm{r}}_{\tau\tau\delta}\right]$
$\left(\dfrac{\partial^2 h}{\partial \varrho^2}\right)_T$	$=$	$\dfrac{TR}{\varrho^2}\left[\tau\delta^2\alpha^{\mathrm{r}}_{\tau\delta\delta} + 2\delta^2\alpha^{\mathrm{r}}_{\delta\delta} + \delta^3\alpha^{\mathrm{r}}_{\delta\delta\delta}\right]$
$\left(\dfrac{\partial^2 h}{\partial T^2}\right)_\varrho$	$=$	$\dfrac{R}{T}\left[\tau^3(\alpha^{0}_{\tau\tau\tau} + \alpha^{\mathrm{r}}_{\tau\tau\tau}) + 2\tau^2(\alpha^{0}_{\tau\tau} + \alpha^{\mathrm{r}}_{\tau\tau}) + \tau^2\delta\alpha^{\mathrm{r}}_{\tau\tau\delta}\right]$
$\left(\dfrac{\partial^2 h}{\partial \varrho\, \partial T}\right)$	$=$	$\dfrac{R}{\varrho}\left[\delta^2\alpha^{\mathrm{r}}_{\delta\delta} - \tau^2\delta\alpha^{\mathrm{r}}_{\tau\tau\delta} + \delta\alpha^{\mathrm{r}}_{\delta} - \tau\delta^2\alpha^{\mathrm{r}}_{\tau\delta\delta} - \tau\delta\alpha^{\mathrm{r}}_{\tau\delta}\right]$
$\left(\dfrac{\partial^2 g}{\partial \varrho^2}\right)_T$	$=$	$\dfrac{TR}{\varrho^2}\left[-1 + 3\delta^2\alpha^{\mathrm{r}}_{\delta\delta} + \delta^3\alpha^{\mathrm{r}}_{\delta\delta\delta}\right]$
$\left(\dfrac{\partial^2 g}{\partial T^2}\right)_\varrho$	$=$	$\dfrac{R}{T}\left[\tau^2(\alpha^{0}_{\tau\tau} + \alpha^{\mathrm{r}}_{\tau\tau}) + \tau^2\delta\alpha^{\mathrm{r}}_{\tau\tau\delta}\right]$
$\left(\dfrac{\partial^2 g}{\partial \varrho\, \partial T}\right)$	$=$	$\dfrac{R}{\varrho}\left[1 + 2\delta\alpha^{\mathrm{r}}_{\delta} - 2\tau\delta\alpha^{\mathrm{r}}_{\tau\delta} + \delta^2\alpha^{\mathrm{r}}_{\delta\delta} - \tau\delta^2\alpha^{\mathrm{r}}_{\tau\delta\delta}\right]$

Definition	Transformation
$\left(\frac{\partial^2 T}{\partial p^2}\right)_\varrho$	$= -\left(\frac{\partial^2 p}{\partial T^2}\right)_\varrho \left(\frac{\partial p}{\partial T}\right)_\varrho^{-3}$
$\left(\frac{\partial^2 T}{\partial \varrho^2}\right)_p$	$= -\left[\left(\frac{\partial^2 p}{\partial \varrho^2}\right)_T \left(\frac{\partial p}{\partial T}\right)_\varrho - \left(\frac{\partial p}{\partial \varrho}\right)_T \left(\frac{\partial^2 p}{\partial T\,\partial \varrho}\right)\right]\left(\frac{\partial p}{\partial T}\right)_\varrho^{-2} + \left[\left(\frac{\partial^2 p}{\partial T\,\partial \varrho}\right)\left(\frac{\partial p}{\partial T}\right)_\varrho - \left(\frac{\partial p}{\partial \varrho}\right)_T \left(\frac{\partial^2 p}{\partial T^2}\right)_\varrho\right]\left(\frac{\partial p}{\partial T}\right)_\varrho^{-3}\left(\frac{\partial p}{\partial \varrho}\right)_T$
$\left(\frac{\partial^2 T}{\partial p\,\partial \varrho}\right)$	$= -\left[\left(\frac{\partial^2 p}{\partial T\,\partial \varrho}\right)\left(\frac{\partial p}{\partial T}\right)_\varrho - \left(\frac{\partial p}{\partial \varrho}\right)_T \left(\frac{\partial^2 p}{\partial T^2}\right)_\varrho\right]\left(\frac{\partial p}{\partial T}\right)_\varrho^{-3}$
$\left(\frac{\partial^2 \varrho}{\partial p^2}\right)_T$	$= -\left(\frac{\partial^2 p}{\partial \varrho^2}\right)_T \left(\frac{\partial p}{\partial \varrho}\right)_T^{-3}$
$\left(\frac{\partial^2 \varrho}{\partial T^2}\right)_p$	$= -\left[\left(\frac{\partial^2 p}{\partial T^2}\right)_\varrho \left(\frac{\partial p}{\partial \varrho}\right)_T - \left(\frac{\partial p}{\partial T}\right)_\varrho \left(\frac{\partial^2 p}{\partial T\,\partial \varrho}\right)\right]\left(\frac{\partial p}{\partial \varrho}\right)_T^{-2} + \left[\left(\frac{\partial^2 p}{\partial T\,\partial \varrho}\right)\left(\frac{\partial p}{\partial \varrho}\right)_T - \left(\frac{\partial p}{\partial T}\right)_\varrho \left(\frac{\partial^2 p}{\partial \varrho^2}\right)_T\right]\left(\frac{\partial p}{\partial \varrho}\right)_T^{-3}\left(\frac{\partial p}{\partial T}\right)_\varrho$
$\left(\frac{\partial^2 \varrho}{\partial T\,\partial p}\right)$	$= -\left[\left(\frac{\partial^2 p}{\partial T\,\partial \varrho}\right)\left(\frac{\partial p}{\partial \varrho}\right)_T - \left(\frac{\partial p}{\partial T}\right)_\varrho \left(\frac{\partial^2 p}{\partial \varrho^2}\right)_T\right]\left(\frac{\partial p}{\partial \varrho}\right)_T^{-3}$
$\left(\frac{\partial c_p}{\partial T}\right)_\varrho$	$= \left(\frac{\partial^2 h}{\partial T^2}\right)_\varrho + \left(\frac{\partial h}{\partial \varrho}\right)_T \left(\frac{\partial p}{\partial T}\right)_\varrho \left(\frac{\partial^2 p}{\partial T\,\partial \varrho}\right)\left(\frac{\partial p}{\partial \varrho}\right)_T^{-2} - \left[\left(\frac{\partial^2 h}{\partial T\,\partial \varrho}\right)\left(\frac{\partial p}{\partial T}\right)_\varrho + \left(\frac{\partial h}{\partial \varrho}\right)_T \left(\frac{\partial^2 p}{\partial T^2}\right)_\varrho\right]\left(\frac{\partial p}{\partial \varrho}\right)_T^{-1}$
$\left(\frac{\partial c_p}{\partial \varrho}\right)_T$	$= \left(\frac{\partial^2 h}{\partial T\,\partial \varrho}\right) + \left(\frac{\partial h}{\partial \varrho}\right)_T \left(\frac{\partial p}{\partial T}\right)_\varrho \left(\frac{\partial^2 p}{\partial \varrho^2}\right)_T \left(\frac{\partial p}{\partial \varrho}\right)_T^{-2} - \left[\left(\frac{\partial^2 h}{\partial \varrho^2}\right)_T \left(\frac{\partial p}{\partial T}\right)_\varrho + \left(\frac{\partial h}{\partial \varrho}\right)_T \left(\frac{\partial^2 p}{\partial T\,\partial \varrho}\right)\right]\left(\frac{\partial p}{\partial \varrho}\right)_T^{-1}$
$\left(\frac{\partial c_p}{\partial p}\right)_h$	$= \dfrac{\left(\frac{\partial c_p}{\partial T}\right)_\varrho \left(\frac{\partial h}{\partial \varrho}\right)_T - \left(\frac{\partial c_p}{\partial \varrho}\right)_T \left(\frac{\partial h}{\partial T}\right)_\varrho}{\left(\frac{\partial p}{\partial T}\right)_\varrho \left(\frac{\partial h}{\partial \varrho}\right)_T - \left(\frac{\partial p}{\partial \varrho}\right)_T \left(\frac{\partial h}{\partial T}\right)_\varrho}$