

$$Q := \frac{\sqrt{(R \cdot T \cdot (P4 + dP + P_{gauge}))}}{P4 + \frac{dP}{2}} \cdot \left(Cmin + \frac{(Cmax - Cmin) \cdot X}{100} \right)$$

$$\frac{\sqrt{RT(P4 + dP + P_{gauge})} \left(Cmin + \frac{1}{100} (Cmax - Cmin) X \right)}{P4 + \frac{1}{2} dP} \quad (1)$$

$$dQ := ((diff(Q, P4) \cdot dP4)^2 + (diff(Q, dP) \cdot ddP)^2 + (diff(Q, P_{gauge}) \cdot dP_{gauge})^2 + (diff(Q, R) \cdot dR)^2 + (diff(Q, T) \cdot dT)^2 + (diff(Q, X) \cdot dX)^2)^{1/2}$$

$$\frac{1}{2} \left(4 \left(\frac{1}{2} \frac{\left(Cmin + \frac{1}{100} (Cmax - Cmin) X \right) R T}{\sqrt{RT(P4 + dP + P_{gauge})} \left(P4 + \frac{1}{2} dP \right)} \right. \right. \quad (2)$$

$$\left. \left. - \frac{\sqrt{RT(P4 + dP + P_{gauge})} \left(Cmin + \frac{1}{100} (Cmax - Cmin) X \right)}{\left(P4 + \frac{1}{2} dP \right)^2} \right)^2 dP^2 \right.$$

$$+ 4 \left(\frac{1}{2} \frac{\left(Cmin + \frac{1}{100} (Cmax - Cmin) X \right) R T}{\sqrt{RT(P4 + dP + P_{gauge})} \left(P4 + \frac{1}{2} dP \right)} \right.$$

$$\left. - \frac{1}{2} \frac{\sqrt{RT(P4 + dP + P_{gauge})} \left(Cmin + \frac{1}{100} (Cmax - Cmin) X \right)}{\left(P4 + \frac{1}{2} dP \right)^2} \right)^2 ddP^2$$

$$+ \frac{RT \left(Cmin + \frac{1}{100} (Cmax - Cmin) X \right)^2 dP_{gauge}^2}{(P4 + dP + P_{gauge}) \left(P4 + \frac{1}{2} dP \right)^2}$$

$$+ \frac{T(P4 + dP + P_{gauge}) \left(Cmin + \frac{1}{100} (Cmax - Cmin) X \right)^2 dR^2}{R \left(P4 + \frac{1}{2} dP \right)^2}$$

$$+ \frac{R(P4 + dP + P_{gauge}) \left(Cmin + \frac{1}{100} (Cmax - Cmin) X \right)^2 dT^2}{T \left(P4 + \frac{1}{2} dP \right)^2}$$

$$\left. + \frac{4RT(P4 + dP + P_{gauge}) \left(\frac{1}{100} Cmax - \frac{1}{100} Cmin \right)^2 dX^2}{\left(P4 + \frac{1}{2} dP \right)^2} \right)^{1/2}$$