## Page 170, the first line (equation)

Obviously, from $\overset{\backslash\alpha}{\overline{\rho_\alpha \varepsilon_\alpha}} = \grave{\rho}_\alpha \varepsilon_\alpha + \rho_\alpha \grave{\varepsilon}_\alpha$ we obtain:

$$\sum_{\alpha=1}^{n} \rho_\alpha \grave{\varepsilon}_\alpha = \sum_{\alpha=1}^{n} \overset{\backslash\alpha}{\overline{\rho_\alpha \varepsilon_\alpha}} - \sum_{\alpha=1}^{n} \grave{\rho}_\alpha \varepsilon_\alpha . \tag{1}$$

The first term on r.h.s. can be expressed using (4.3):

$$\begin{aligned} \sum_\alpha \overset{\backslash\alpha}{\overline{\rho_\alpha \varepsilon_\alpha}} &= \sum_\alpha \left[ \frac{\partial}{\partial t} (\rho_\alpha \varepsilon_\alpha) + \mathbf{v}_\alpha . \mathrm{grad}\,(\rho_\alpha \varepsilon_\alpha) \right] \\ &= \frac{\partial}{\partial t} \sum_\alpha (\rho_\alpha \varepsilon_\alpha) + \sum_\alpha \mathbf{v}_\alpha . \mathrm{grad}\,(\rho_\alpha \varepsilon_\alpha) \end{aligned}$$

and referring to (4.104):

$$\sum_\alpha \overset{\backslash\alpha}{\overline{\rho_\alpha \varepsilon_\alpha}} = \sum_\alpha \mathbf{v}_\alpha . \mathrm{grad}\,(\rho_\alpha \varepsilon_\alpha) \tag{2}$$

Combining (1) and (2) gives the equation in the first line on page 170.