280(2a): Dimensionality of the Continued Fraction

This is best seen by considering the continued fraction in the format:

$$\tilde{C}(p) = \frac{(\epsilon_0 - \epsilon_\infty)\, k_0(0)\,(p^2 + \gamma p + K_1(0))}{p^3 + \gamma p^2 + (K_0(0) + K_1(0))p + \gamma K_0(0)} \quad -(1)$$

$$= (\epsilon_0 - \epsilon_\infty) \cfrac{k_0(0)}{p + \cfrac{K_0(0)}{p + \cfrac{K_1(0)}{p + \gamma}}}$$

To recover the Debye ~~theory~~:

$$k_0(0) = \cfrac{K_0(0)}{p + \cfrac{K_1(0)}{p + \gamma}} \quad -(2)$$

so:

$$\tilde{C}(p) = (\epsilon_0 - \epsilon_\infty) \frac{k_0(0)}{p + k_0(0)} \quad -(3)$$

where

$$k_0(0) = \frac{1}{\tau}. \quad -(4)$$

The dimensionality of $k_0(0)$ is s^{-1}, the dimensionality of $K_0(0)$ and $K_1(0)$ is s^{-2}, and that of $\tilde{C}(p)$ is dimensionless.