Reactivity Coefficients

$$\frac{\partial \rho}{\partial t} = +\rho_o \delta(t) + \alpha_{T_F} \frac{\partial T_F}{\partial t} U(t)$$

$$\int_{-\infty}^{t} \frac{\partial \rho}{\partial s} ds = \int_{-\infty}^{t} \rho_o \delta(s) ds + \int_{-\infty}^{t} \alpha_{T_F} \frac{\partial T_F}{\partial s} U(s) \, ds$$

$$\int_{-\infty}^{t} \frac{\partial \rho}{\partial s} ds = \rho_o U(t) + \int_{0}^{t} \alpha_{T_F} \frac{\partial T_F}{\partial s} ds$$

$$\int_{\rho(-\infty)}^{\rho(t)} d(\rho(s)) = \rho_o U(t) + \alpha_{T_F} \int_{T_F(0)}^{T_F(t)} d(T_F(s))$$

$$\rho(t) - \rho(-\infty) = \rho_o U(t) + \alpha_{T_F}(T_F(t) - T_F(0))$$

$$\rho(t) = \rho_o + \alpha_{T_F}((T_F(t) - T_F(0))$$