

# ERQ II – Export

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Conteúdo

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Fator de Efetividade

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Fator de Efetividade  $\eta$

$$\eta_i = (\phi_i \coth \phi_i - 1) \frac{3}{\phi_i^2} = \eta_j \frac{k'_i}{k'_j};$$

$$i, j \in \{PP, PG\}$$

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# Módulo de Thiele

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Módulo de Thiele  $\phi$

$$\phi_i = \frac{d_i}{2} \sqrt{\frac{k' \rho_c}{De}} = \phi_j \frac{d_i}{d_j};$$

$$i, j \in \{PP, PG\}$$

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$F(\text{phiPG})$

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$$f(\phi_{PG}) = \frac{\phi_{PG} \frac{d_{p,PP}}{d_{p,PG}} \coth \left( \phi_{PG} \frac{d_{p,PP}}{d_{p,PG}} \right) - 1}{\left( \frac{d_{p,PP}}{d_{p,PG}} \right)^2 (\phi_{PP} \coth \phi_{PG} - 1)} - \frac{k'_{ap,PP}}{k'_{ap,PG}} = 0$$

$$\begin{aligned} \frac{k'_{ap,PP}}{k'_{ap,PG}} = \frac{\eta_{PP}}{\eta_{PG}} &\implies f(\phi_{PP}) = \frac{\eta_{PP}}{\eta_{PG}} - \frac{k'_{ap,PP}}{k'_{ap,PG}} = \\ &= \frac{(\phi_{PP} \coth \phi_{PP} - 1) \frac{3}{\phi_{PP}^2}}{(\phi_{PG} \coth \phi_{PG} - 1) \frac{3}{\phi_{PG}^2}} - \frac{k'_{ap,PP}}{k'_{ap,PG}} = \frac{\phi_{PG} \frac{d_{p,PP}}{d_{p,PG}} \coth \left( \phi_{PG} \frac{d_{p,PP}}{d_{p,PG}} \right) - 1}{\left( \frac{d_{p,PP}}{d_{p,PG}} \right)^2 (\phi_{PP} \coth \phi_{PG} - 1)} - \frac{k'_{ap,PP}}{k'_{ap,PG}} = 0 \end{aligned}$$

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# Constante intrínseca

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Constante intrínseca  $k'$

$$k' = \frac{k'_{ap,PP} - k'_{ap,PG}}{\eta_P P - \eta_P G}$$

$$\eta_{PP} - \eta_{PG} = \frac{k'_{ap,PP} - k'_{ap,PG}}{k'} \implies k' = \frac{k'_{ap,PP} - k'_{ap,PG}}{\eta_{PP} - \eta_{PG}}$$

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# Difusividade Efetiva

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Difusividade Efetiva  $De$

$$De = \frac{k' \rho_C (d_{PP} - d_{PG})^2}{4(\phi_{PP} - \phi_{PG})^2}$$

$$\phi_{PG} - \phi_{PP} = \frac{d_{PP} - d_{PG}}{2} \sqrt{\frac{k' \rho_c}{De}} \implies De = \frac{k' \rho_C (d_{PP} - d_{PG})^2}{4(\phi_{PP} - \phi_{PG})^2}$$