

TOUGH v2 manual

$$k_{rl} = \begin{cases} \sqrt{S^*} \left\{ 1 - \left(1 - [S^*]^{1/\lambda} \right)^\lambda \right\}^2 & \text{if } S_1 < S_{ls} \\ 1 & \text{if } S_1 \geq S_{ls} \end{cases}$$

Gas relative permeability can be chosen as one of the following two forms, the second of which is due to Corey (1954)

$$k_{rg} = \begin{cases} 1 - k_{rl} & \text{if } S_{gr} = 0 \\ \left((1 - \hat{S})^2 (1 - \hat{S}^2) \right) & \text{if } S_{gr} > 0 \end{cases}$$

TOUGH2TrainingMaterial

$$k_{rl} = S_e^\varepsilon \left[1 - \left(1 - S_e^{1/m} \right)^m \right]^2$$

$$k_{rg} = (1 - S_e)^\gamma \left[1 - S_e^{1/m} \right]^{2m}$$