# Absolute permeability @model

There is a statistical correlation between absolute permeability $k_a$ and effective porosity $\phi = \phi_e$ which can be approximated by various empirical models based on PORO-PERM correlations.

The most generic approach to permeability modelling is based on the concepts of Flow Zone Indicator $FZI$:

(1) $$k = 1014.24 \cdot FZI^2 \cdot \frac{\phi^3}{(1-\phi)^2}$$

In case $FZI = \text{const}$ for each lithofacies the model (1) represents conventional Cozeny-Karman permeability @model

In a more general case, the Flow Zone Indicator keeps dependance on variation of shaliness and effective porosity with in a given lithofacies:

(2) $$FZI = FZI(V_{sh}, \phi)$$

but not as strong as permeability and with a better separation between lithofacies which makes it easier to pick up the correlation.

Below is the list of popular permeability-porosity models also called PORO-PERM correlations:

| |
|---|
| Exponential permeability @model |
| Power law permeability @model |
| Dual-component power law permeability @model |
| Cozeny-Karman permeability @model |
| Dual-component Cozeny-Karman permeability @model |
| ANN permeability @model |

## See also

Petroleum Industry / Upstream / Subsurface E&P Disciplines / Petrophysics / Absolute permeability

## References