

## Consideration Regarding Permeability Evaluation for Reservoir Rocks

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### Abstract

The present paper represents a short review on characterization of the reservoir rocks. The first part gives a brief summary of the main parameters used to evaluate a petroleum reservoir (porosity, permeability, and water saturation). In the second part, other geological properties of the rocks with influence on the value of porosity, permeability, and water saturation are summarized. In the third part, the correlations between petrophysical properties of reservoir rocks established over time are presented. The final part provides a few remarks on the evaluation of the rock permeability using different correlations.

The permeability could be roughly estimated from other parameters such as porosity and interstitial (irreducible) water saturation.

Generally, dual correlations (permeability-porosity, permeability-water saturation, or porosity-water saturation) are poor and only isolated cases could give good correlation coefficients. In some areas there is a very good correlation between permeability and porosity, while in other areas there is a better correlation between permeability and irreducible water saturation.

Better results are obtained with multiple correlations like permeability-porosity-water saturation-“others”. The effects of other parameters are usually lumped together through “coefficients”.

However, as a rule, the equations established between different parameters are valid just locally (and/or regionally) for a specific area and a specific reservoir (geological formation) and, in order to evaluate other geological formations or other pore systems, these relationships need to be adapted to the new conditions.