

Download File PDF Reservoir Engineering Manual

#Jenny



Finally I get this ebook, thanks for all these I can get now!

#Rio



Cool! I'am really happy

#Markus Jensen



I did not think that this would work, my best friend showed me this website, and it does! I get my most wanted eBook

#Hun Tsu



wtf this great ebook for free?!

#Che Salsa



My friends are so mad that they do not know how I have all the high quality ebook which they do not!

#Diego Butler



so many fake sites. this is the first one which worked! Many thanks

[Download PDF version of :](#)
Reservoir Engineering Manual

1. Helium porosimeter

Introduction

From the viewpoint of petroleum engineers, the two most important properties of a reservoir rock are porosity and permeability. Porosity is a measure of storage capacity of a reservoir. It is defined as the ratio of the pore volume to bulk volume, and it may be expressed as either a percent or a fraction. Its equation form

$$\text{Porosity} = \frac{\text{Pore Volume}}{\text{Bulk Volume}} = \frac{\text{Bulk Volume} - \text{Grain Volume}}{\text{Bulk Volume}}$$

Two types of porosity may be measured: total or absolute porosity and effective porosity. Total porosity is the ratio of all the pore spaces in a rock to the bulk volume of the rock. Effective porosity is the ratio of interconnected void spaces to the bulk volume. Thus, only the effective porosity contains fluids that can be produced from wells. For granular materials such as sandstone, the effective porosity may approach the total porosity. However, for shales and for highly cemented or vugular rocks such as some limestones, large variations may exist between effective and total porosity. Porosity may be classified according to its origin as either primary or secondary. Primary or original porosity is developed during deposition of the sediment. Secondary porosity is caused by some geologic process subsequent to formation of the deposit. These changes in the original pore spaces may be created by ground stresses, water movement, or various types of geological activities after the original sediments were deposited. Fracturing or formation of solution cavities often will increase the original porosity of the rock.

Pore Volume Measurement:

All the methods measuring pore volume yield effective porosity. The methods are based on either the extraction of a fluid from the rock or the introduction of a fluid into the pore spaces of the rock.

One of the most used methods is the helium technique, which employs Boyle's law. The helium gas in the reference cell isothermally expands into a sample cell. After expansion, the resultant equilibrium pressure is measured. The Helium porosimeter apparatus is shown schematically in Fig 1.