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Gas occurrence property in shales of Tuha basin northwest china

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Pore of rock under formation condition must be fulfilled by gas, oil, or water, so the volume of water and gas is equation to porous volume in shale gas. The occurrences states of gas are free gas, solution gas, and absorbed gas. Field analysis is used to obtain total gas content by improved lost gas recover method. Free gas content acquired by pore proportion of gas, which use measured pore volume minus water and oil saturation, convert gas content of standard condition by state equation. Water saturation obtain from core water content, oil saturation obtain from extract carbohydrate. Solution gas need gas solubility in oil and water to calculate solution gas content in standard condition. Absorbed gas, introduce Absorbed Gas Saturation ε, which acquire from isothermal adsorption volume vs field analysis gas content in many basins of published paper, need isothermal adsorption and Absorbed Gas Saturation to obtain absorbed gas content. All of the data build connect with logging value by regression equation. The gas content is 0.92-1.53 m3/t from field analysis, evaluate gas content is 1.33 m3/t average, free gas proportion is about 47%, absorbed gas counter for 49%, and solution gas is average 4%.