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Equivalent grain size method Importance of top seal evaluation for exploration

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Abstract: “Equivalent grain size (EGS) method” is a unique approach to represent the top seal capacity in terms of the ideal grain size. Theoretical consideration of the capillary seals suggests that the capillary pressure, which controls the seal capacity, depends on the size of the pore-throat. The EGS method uses the pore-throat size calculated from known or measurable parameters, such as hydrocarbon column height, fluid densities, contact angle, and interfacial tension. Furthermore, the pore-throat size can be converted to porosity and the grain size by the experimentally derived function. Gas, which is less than oil in density, behaves to migrate above the oil column in a trap. Consequently, only gas would be entrapped in such a trap where the trap height is smaller than the maximum gas column height which can be held by top seal capacity, whereas such a trap where the trap height is larger than the maximum oil column height would be dominated by oil. This point of view and case studies in this paper demonstrate that the relationship between the trap height and the top seal capacity plays also important role to determine the hydrocarbon fill (oil or gas) as well as the geochemical factors. Thus, the EGS method can provide new insights into understanding hydrocarbon fill patterns in fields and prospects.

Key words: [equivalent grain size method](#), [top seal capacity](#), [capillary pressure](#), [pore-throat size](#), [trap height](#), [maximum oil and gas column height](#), [hydrocarbon fill pattern](#)

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