Dykstra–Parsons Permeability Variation and Lorenz Coefficient

Dykstra–Parsons permeability variation V from the median and 84.1 percentile permeabilities, and the matching Lorenz coefficient of heterogeneity.

Input parameters

Unit system: SI

Parameter	Value	Unit
Median permeability (50 % of thickness has more)	100.00	mD
Permeability exceeded by 84.1 % of the thickness	80.000	mD

Calculated results

Parameter	Value	Unit
Dykstra–Parsons permeability variation	0.20000	
Lorenz coefficient	0.11917	

Notes for this case

• V = 0 is a uniform reservoir and V → 1 is extremely heterogeneous; most reservoirs lie between 0.5 and 0.9. Read k_{50} and $k_{84.1}$ from a log-probability plot of the core permeabilities ranked from highest to lowest.

Formula and method

$$V = \frac{k_{50} - k_{84.1}}{k_{50}}, \quad L = 0.0116356 + 0.339794V + 1.066405V^2 - 0.3852407V^3$$

Variables

k_{50}	Median permeability (50 % of thickness has more)	m²
$k_{84.1}$	Permeability exceeded by 84.1 % of the thickness	m²
V	Dykstra–Parsons permeability variation	-
L	Lorenz coefficient	-

Method and standards

Dykstra–Parsons and Lorenz heterogeneity measures.

Assumptions and limits

- Log-normal permeability distribution.

Report details

Report reference	FCC-QM9P-DGR4 (the same inputs always give the same reference)
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Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/chemical/reservoir-engineering/dykstra-parsons-lorenz-heterogeneity

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.