

Phase mobility

A property characterizing agility of the [fluid \$\alpha\$ -phase](#) under [pressure](#) gradient with account of [reservoir permeability](#) and [dynamic fluid viscosity](#):

$$(1) \quad M_{\alpha}(s) = \frac{k_{\alpha}}{\mu_{\alpha}} = \frac{k_{air} \cdot k_{r\alpha}}{\mu_{\alpha}} = k_{air} \cdot M_{r\alpha}(s)$$

where

$k_{\alpha}(s)$	formation permeability to fluid α-phase
μ_{α}	dynamic viscosity of fluid α-phase
k_{air}	absolute permeability to air
$M_{r\alpha}(s) = \frac{k_{r\alpha}}{\mu_{\alpha}}$	relative phase mobility
$k_{r\alpha}(s)$	relative formation permeability to fluid α-phase
$s = \{s_{\alpha}\}$	reservoir saturation $\sum_{\alpha} s_{\alpha} = 1$, α-phase saturation

In most popular case of a [3-phase fluid model](#) this will be:

$s = \{s_w, s_o, s_g\}$	$s_w + s_o + s_g = 1$
$M_o = \frac{k_o}{\mu_o}$	oil mobility
$M_g = \frac{k_g}{\mu_g}$	gas mobility
$M_w = \frac{k_w}{\mu_w}$	water mobility

See also

[Physics](#) / [Fluid Dynamics](#) / [Percolation](#)

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[[Petrophysics](#)] [[Basic reservoir properties](#)] [[Permeability](#)] [[Absolute permeability](#)] [[Relative permeability](#)] [[Wettability](#)] [[Phase mobility](#)] [[Relative phase mobilities](#)]

[[Multihase Fluid Mobility](#)]