

# Sweep Efficiency (ES)

A part of the reservoir pore volume subjected to displacement by invaded fluid (aquifer, injected water, injected gas or injected chemicals):

Total sweep	Areal sweep	Vertical sweep
(1) $E_S = \frac{V_{sweep}}{V_\phi}$	(2) $E_{SA} = \frac{A_{sweep}}{A_\phi}$	(3) $E_{SV} = \frac{h_{sweep}}{h_\phi}$
$V_{sweep}$ – sweep volume	$A_{sweep}$ – sweep area	$h_{sweep}$ – sweep thickness
$V_\phi$ – pore volume	$A_\phi$ – pore area	$h_\phi$ – pore thickness

The total sweep efficiency is a product of areal and vertical sweep efficiencies:

(4)  $E_S = E_{SV} E_{SA}$