

**TABLE A1 Comparison and Definitions for Various Unit Systems**

		Oil-field Units	SI Units	Ground-water Units§	
$q$	Production rate (oil)	STB/D	m <sup>3</sup> /s	$Q$	Production rate
$q$	Production rate (gas)	MSCF/D	m <sup>3</sup> /s		gal/min
$h$	Formation thickness	ft	m	$m$	Formation thickness
$k$	Permeability	md	m <sup>2</sup>	—	ft
$T$	Temperature	°R	K		
$k/\mu$	Mobility	md/cp	m <sup>2</sup> /(Pa·s)	$P$ or $K$	Coefficient of permeability
$kh/\mu$	Mobility-thickness product	md ft/cp	m <sup>3</sup> /(Pa·s)	$T$	Coefficient of transmissivity
$\Delta p$	Pressure difference	psi	Pa	$s$	Drawdown, >0 for pressure drawdown
$p$	Pressure	psi	Pa	$h$	Head of water
$r$	Radius	ft	m	$r$	Radius
$t$	Time	hours	s	$t$	Time
$\phi$	Porosity, fraction			—	
$c_t$	Total system compressibility	psi <sup>-1</sup>	Pa <sup>-1</sup>	—	
$\phi c_t h$	Porosity-compressibility-thickness product	ft psi <sup>-1</sup>	m·Pa <sup>-1</sup>	$S$	Coefficient of storage, fraction
$v^\dagger$	Velocity (Darcy)	$-1.127 \times 10^{-3} \frac{k}{\mu} \nabla p$	$\frac{k}{\mu} \nabla p$	—	
$p_D$	Dimensionless pressure	$\frac{kh\Delta p}{141.2qB\mu}$	$\frac{2\pi kh\Delta p}{qB\mu}$	$p_D(\alpha) =$	$\frac{Ts}{229.2Q}$
$t_D^\ddagger$	Dimensionless time	$\frac{0.0002637kt}{\phi c_t \mu r_w^2}$	$\frac{kt}{\phi \mu c_t r_w^2}$	$\alpha$	$\frac{0.1337Tt}{Sr_w^2}$
$m_D$	Dimensionless pseudopressure (gas)	$\frac{kh\Delta m(p)}{1422qT}$	$\frac{\pi khT_{sc}\Delta m(p)}{q_{sc}p_{sc}T}$		

\* Much of the information here is taken from Earlougher (1977).

† Four significant digits are used. Velocity is expressed in ft/day.

‡ Various definitions exist.

§ See Table A2.