Dedication

Dedicated to the memory of my family

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Hossam El-Din Abdallah

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Nomenclature

Symbol	Definitions	Unit
$\mathbf{m_1}$	Mass of the dried sample	(gm)
\mathbf{m}_2	Apparent mass of the saturated sample weighed in liquid	(gm)
m_3	Mass of the saturated sample weighed in air	(gm)
ρ_{t}	Density of the solid	(gm/cm ³)
$ ho_{ m b}$	Bulk density of the sample	(gm/cm ³)
$ ho_{ m fl}$	Density of the fluid for buoyancy	(gm/cm^3)
π_{t}	Apparent porosity	(%)
$\pi_{\mathbf{f}}$	Closed porosity	(%)
π_{a}	Open porosity	(%)
d	Density of sample	(gm/cm^3)
m	Weight of the sample	(gm)
${f V}$	Volume	(cm^3)
T	Temperature	$^{\circ}$ C
t	Time	minute