vestigating the chemistry of the silicate bindings

Physico-chemical properties

See also 853127

853076
Thermal diffusivity of upper chalk from Hampshire, England
Pitman, J I
***Engng Geol** V20, N3, Aug 1984, P207-218*

Data collected over an eight year period, from depths of 0 30-21 34m, has been analysed Amplitude and phase lag were determined using Fourier analysis Values of thermal diffusivity were calculated using the variation of amplitude with depth and phase lag with depth, using the Fourier heat flow equation, and there is good agreement between the two methods over a wide depth range Mean thermal conductivity for the water saturated state was also calculated

853077
Behaviour of granites and limestones subjected to slow and homogeneous temperature changes
Homand-Etienne, F, Troalen, J P
***Engng Geol** V20, N3, Aug 1984, P219-233*

Two granites of different grain size and two limestones of different texture were subjected to a slow temperature rise from 200 to 700 deg C The characteristics of the thermal cracking were determined by SEM studies and measurement of longitudinal wave velocity and permeability Intercrystalline boundaries widen out progressively for the granites and permeability increases New microcracks appear at 500-600 deg C for the granites and as low as 200 deg C for crystalline limestone Oolitic limestone shows a more complex evolution of texture with increasing temperature than crystalline limestone It was concluded that both mineralogy and texture can effect the reaction of rocks to slow temperature change

853078
Finite difference method for measuring soil thermal diffusivity in situ
Coleman, J D
***Int J Num Anal Meth Geomech** V8, N6, Nov-Dec 1984, P513-517*

Direct experimental simulation of the finite difference approximation to the one-dimensional heat flow equation is used to devise an experimental technique for measurement of soil thermal conductivity Experimental results for London clay, using this technique, give values consistent with other estimates of diffusivity for clay soils

853079
Statistically based numerical model for heat conduction in fractured rock masses
Gartling, D K, Thomas, R K
***Int J Num Anal Meth Geomech** V8, N6, Nov-Dec 1984, P567-588*

A finite element method for numerically simulating heat conduction in fractured rock is described A simple local model is used for heat conduction in the vicinity of an open fracture and an algorithm generates fracture patterns and properties The pattern and property characteristics are derived from a statistical representation of field data Illustrated examples include single and multiple fractures in a single element, heat conduction across an oblique fracture and fractured blocks

853080
Coupled heat and moisture flow through solids
Radhakrishna, H S, Lau, K C, Crawford, A M
***J Geotech Engng Div ASCE** V110, N12, Dec 1984, P1766-1784*

The TRUCHAM computer program has been developed to numerically model transient coupled heat and moisture flow through a multi-dimensional soil medium It is based upon the Philip and DeVries model using an integrated finite difference procedure, and can accommodate a variety of boundary conditions and materials properties It has been validated with field and laboratory tests and data from exact solutions It can be used to solve thermally induced water movement problems arising from power cables, heat storage or nuclear waste storage

Permeability and capillarity

See also 853006, 853009, 853129

853081
Physical characteristics of sands amended with flyash
Campbell, D J, Fox, W E, Aitken, R L, Bell, L C
***Aust J Soil Res** V21, N2, 1983, P147-154*

Water holding characteristics were determined for fine (0 2-0 5mm) and coarse (1 4-2mm) sand with 0-100% additions of fly ash 10% by weight of ash increased available water capacity by 7 2 and 13 5 times for fine and coarse sands respectively, although additional 10% increases in ash content raised capacity by smaller amounts Saturated hydraulic conductivity fell markedly with ash addition These changes may be accounted for by the replacement of capillary pores with non-capillary pores Void ratios determined were similar to those calculated for ideal packing Small additions of fly ash may markedly improve water holding properties of sandy soils

853082
Application of the method of finite elements to flow in a porous medium (In French)
Humbert, P
***Bull Liaison Lab Ponts Chaussees** N132, July-Aug 1984, P21-37*

Poisson's non-linear equation under transitory conditions is solved using the finite element method. The modifications to the general algorithm needed for particular cases are explained and illustrated by examples of water table calculations and flow in unsaturated porous media

853083
Steady state model for flow in saturated-unsaturated soils
Papagianakis, A K, Fredlund, D G
***Can Geotech J** V21, N3, Aug 1984, P419-430*

Model describing continuous flow between saturated and unsaturated soil, where flow is assumed to be two dimensional and under steady state conditions The coefficient of permeability in the unsaturated zone is treated as a function of pore water pressure head. Results show that the zero pressure isobar is not an upper flow boundary and that the finite solution is relatively insensitive to the function used to express the relationship between the coefficient of permeability and the pore water pressure head

853084
Diffusion of nonreactive and reactive solutes through fine-grained barrier materials
Gillham, R W, Robin, M J L, Dytynshyn, D J, Johnston, H M
***Can Geotech J** V21, N3, Aug 1984, P541-550*