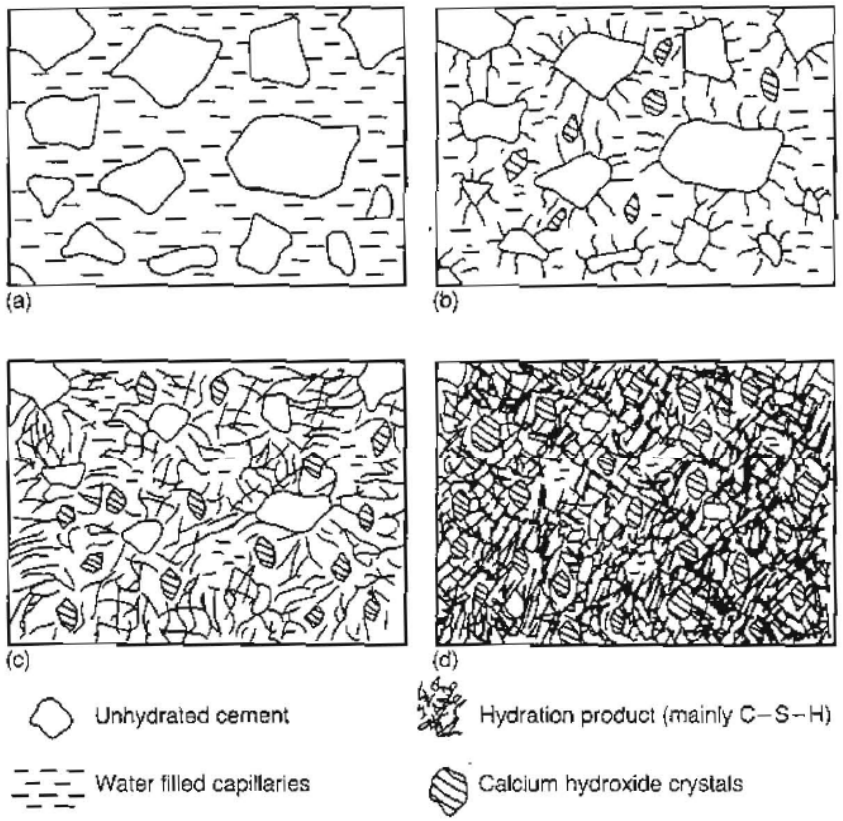
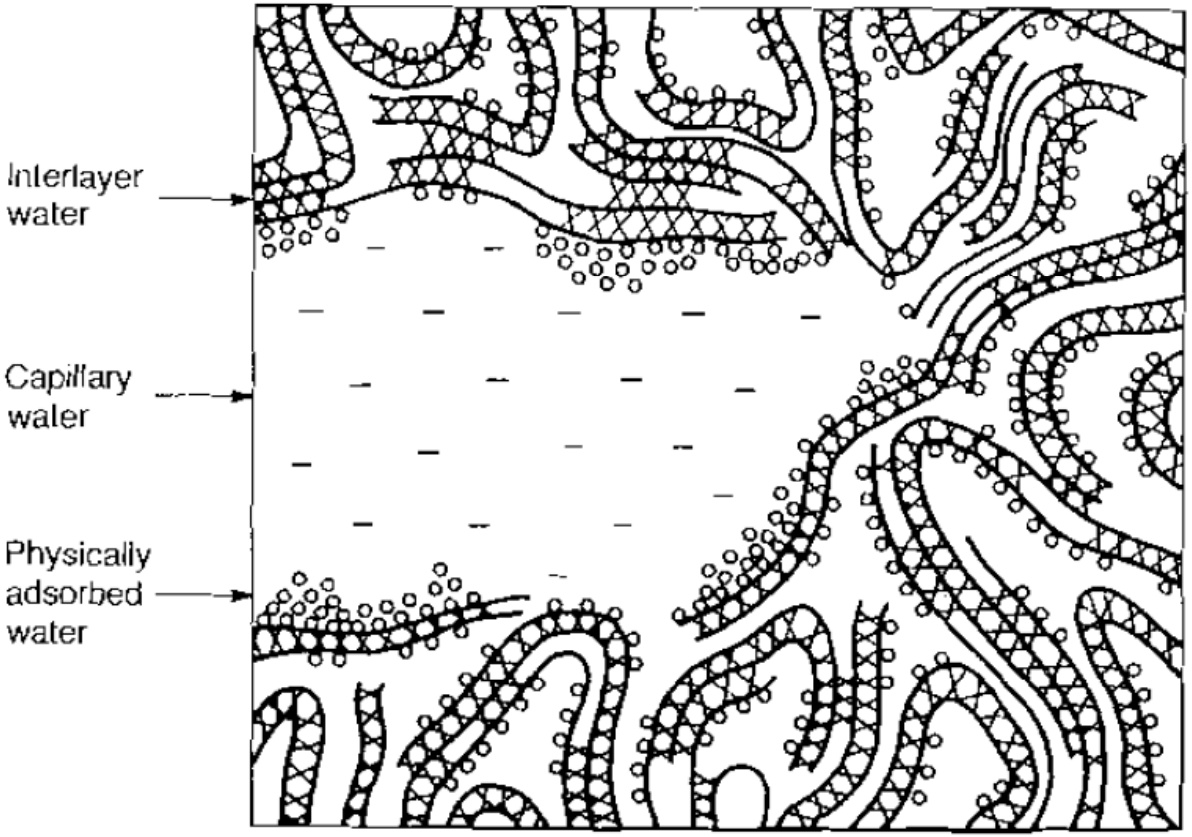
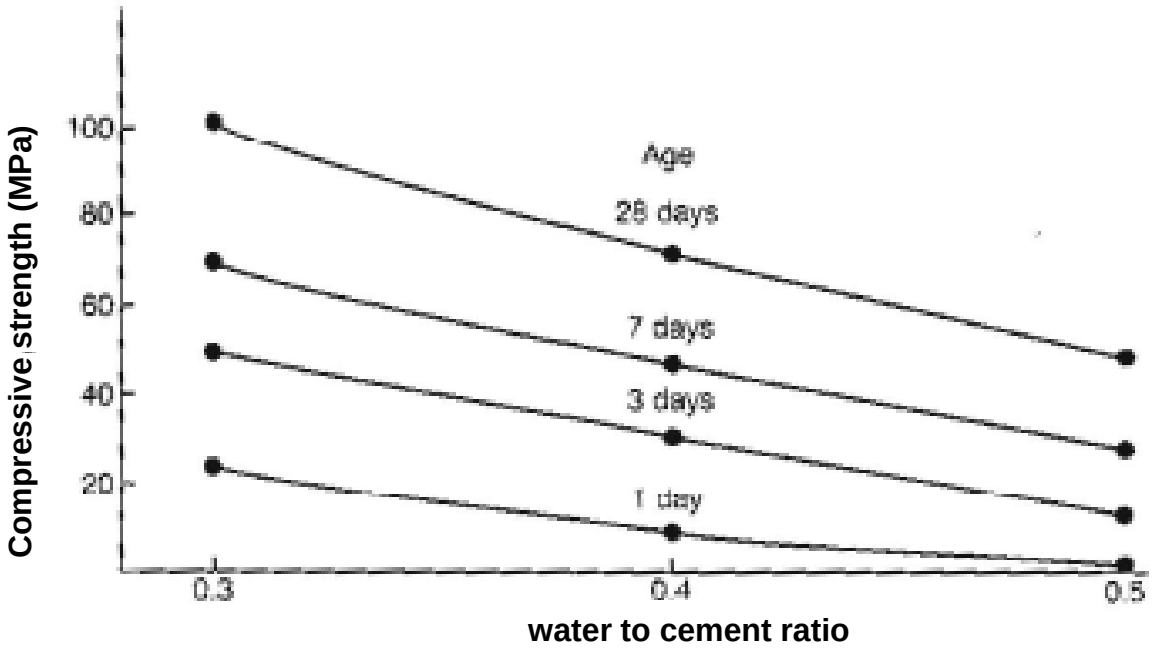


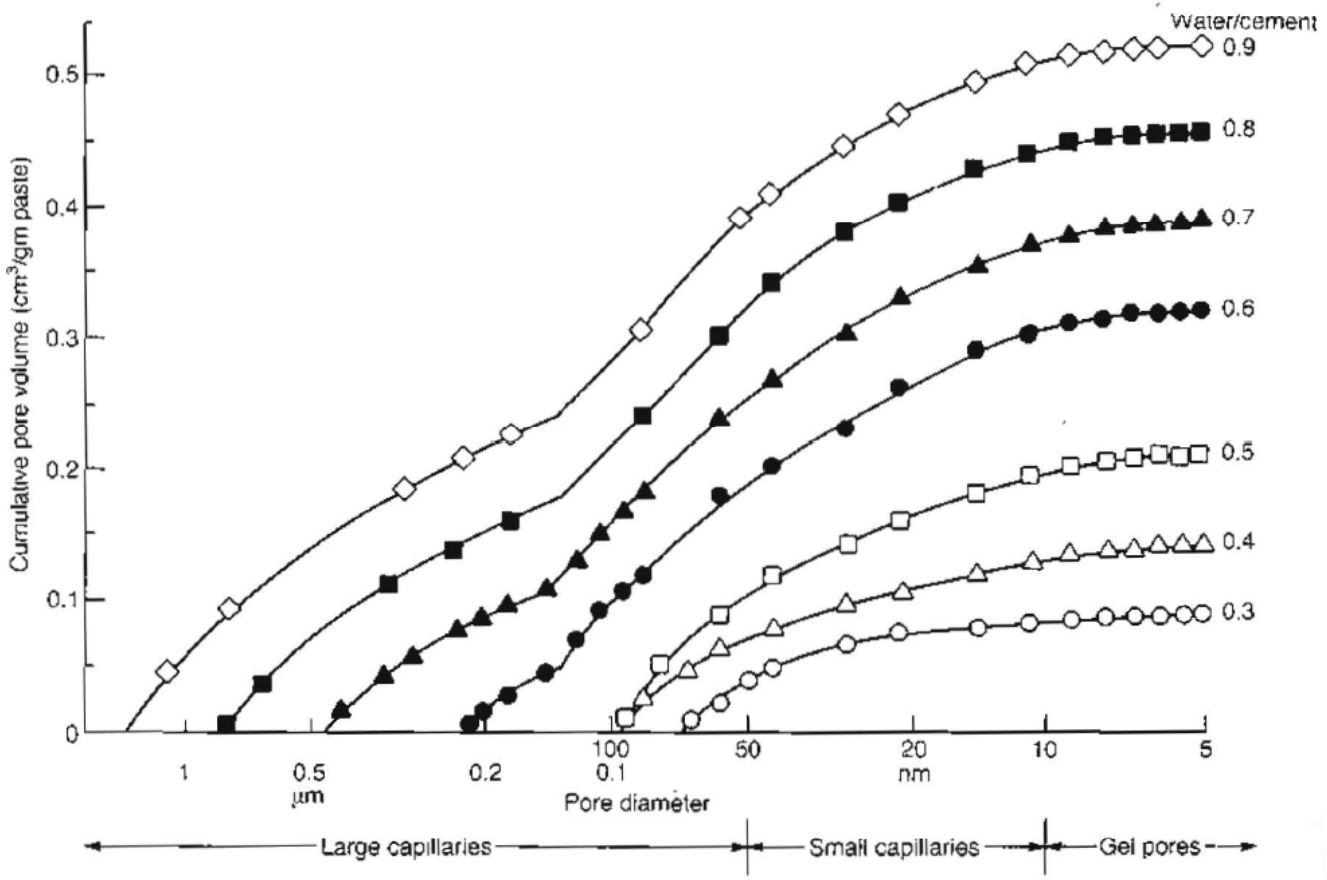
Schematic of the development of microstructure in hydrating cement paste: (a) water and cement comprising fresh cement paste; (b) initial set – interlocking of weak C-S-H products with some $Ca(OH)_2$ crystals; (c) two to three days old – strength from denser C-S-H between unhydrated cement and capillary voids; (d) mature paste – denser C-S-H around $Ca(OH)_2$ crystals, residue of unhydrated cement and capillary voids. (Adapted from Illston, 1996.)



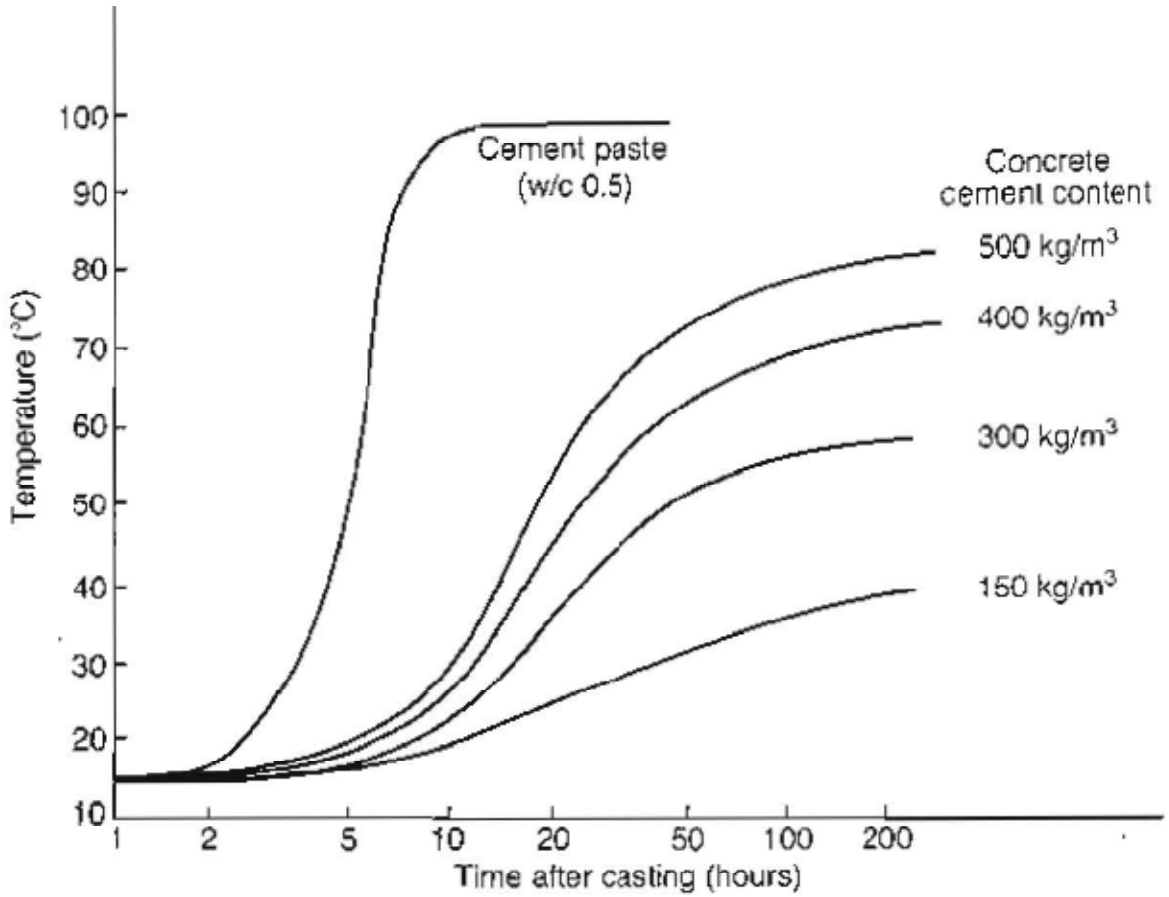
Schematic of forms of water within calcium silicate hydrate (C-S-H). Most strongly bound water is the interlayer water; next is the physically adsorbed water; water in the capillary pores is unbound. (Original figure by Feldman and Sereda, 1970. This figure adapted from Illston, 1996.)



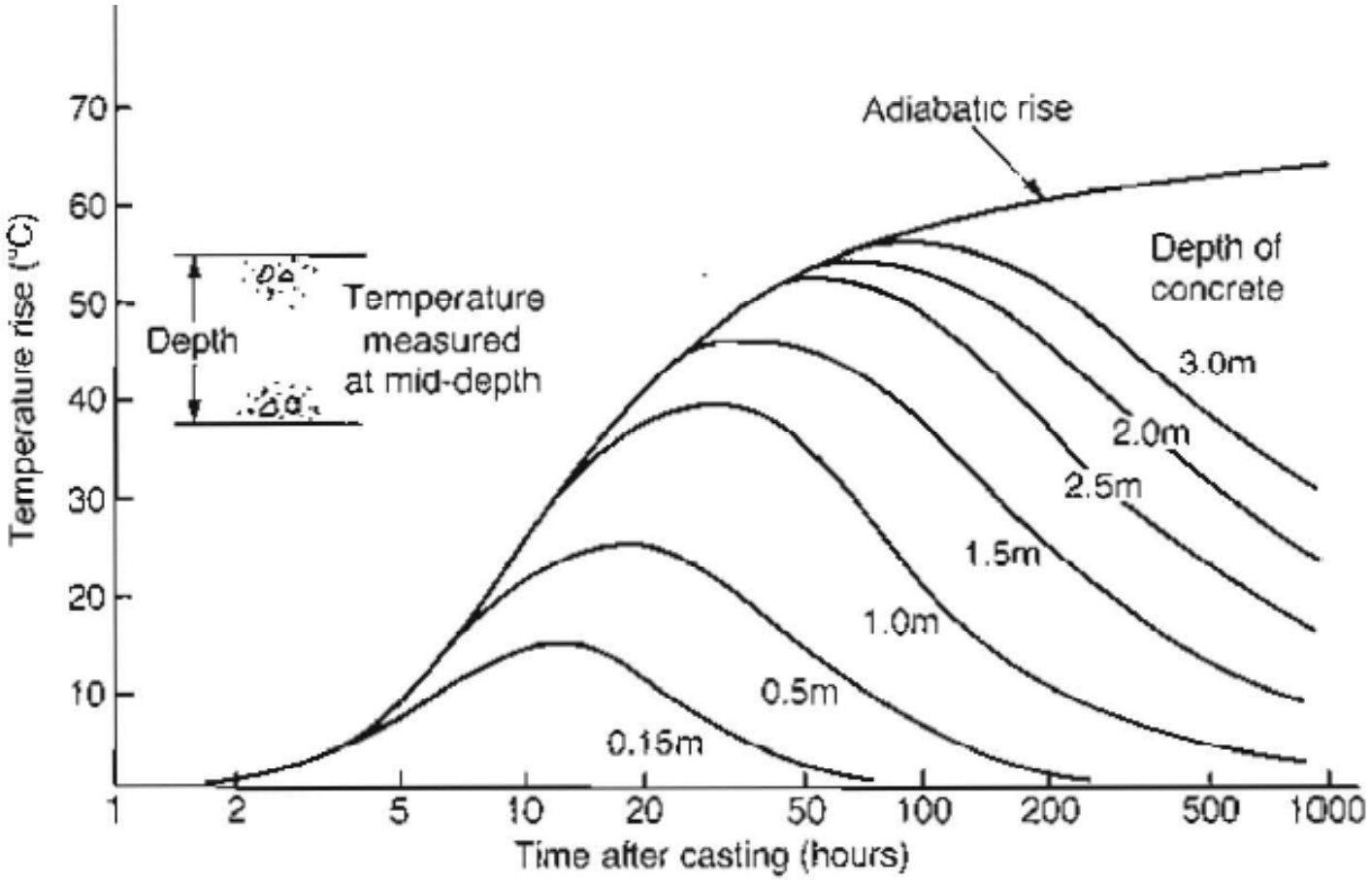
Compressive strength development of hcp in water as function of w/c ratio. (Original data by Domone and Thurairatnam, 1986. Figure adapted from Illston, 1996.)



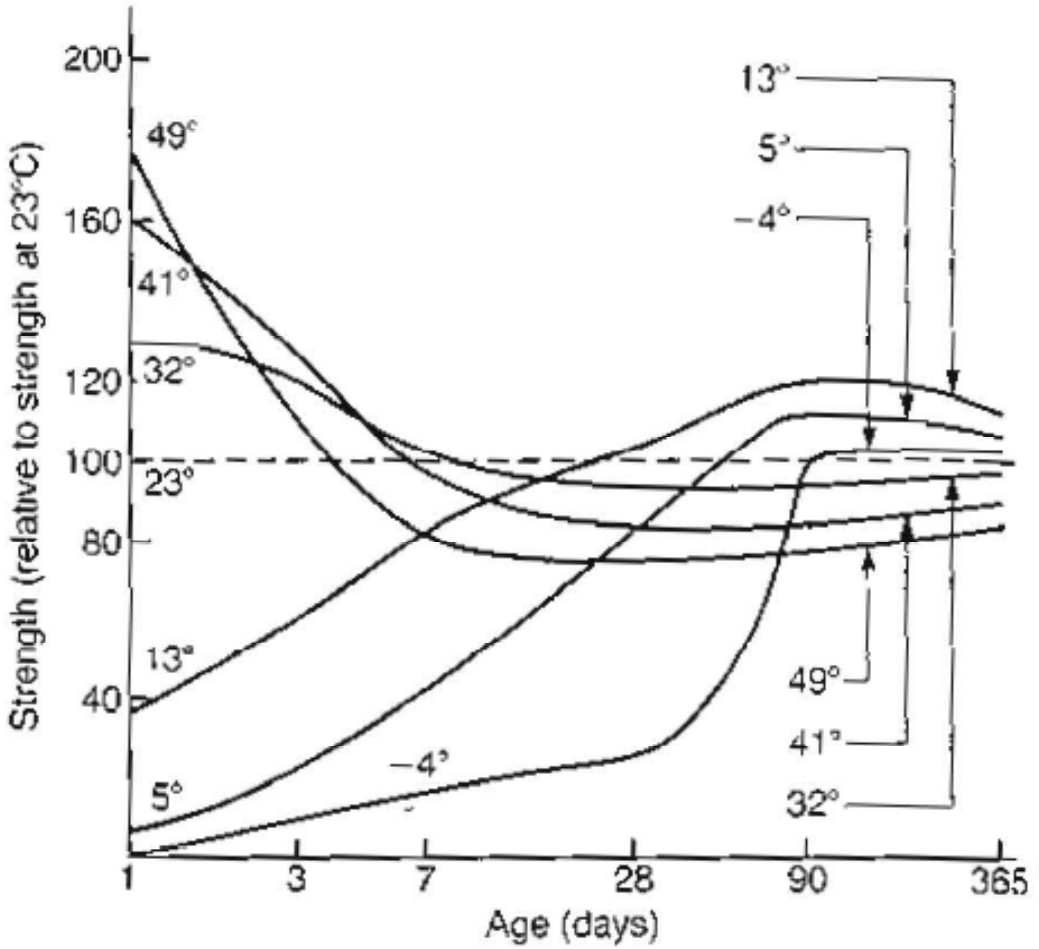
Pore size distribution in 28-day old hydrated cement paste (hcp). (Original data by Mehta, 1986. This figure adapted from Illston, 1996.)



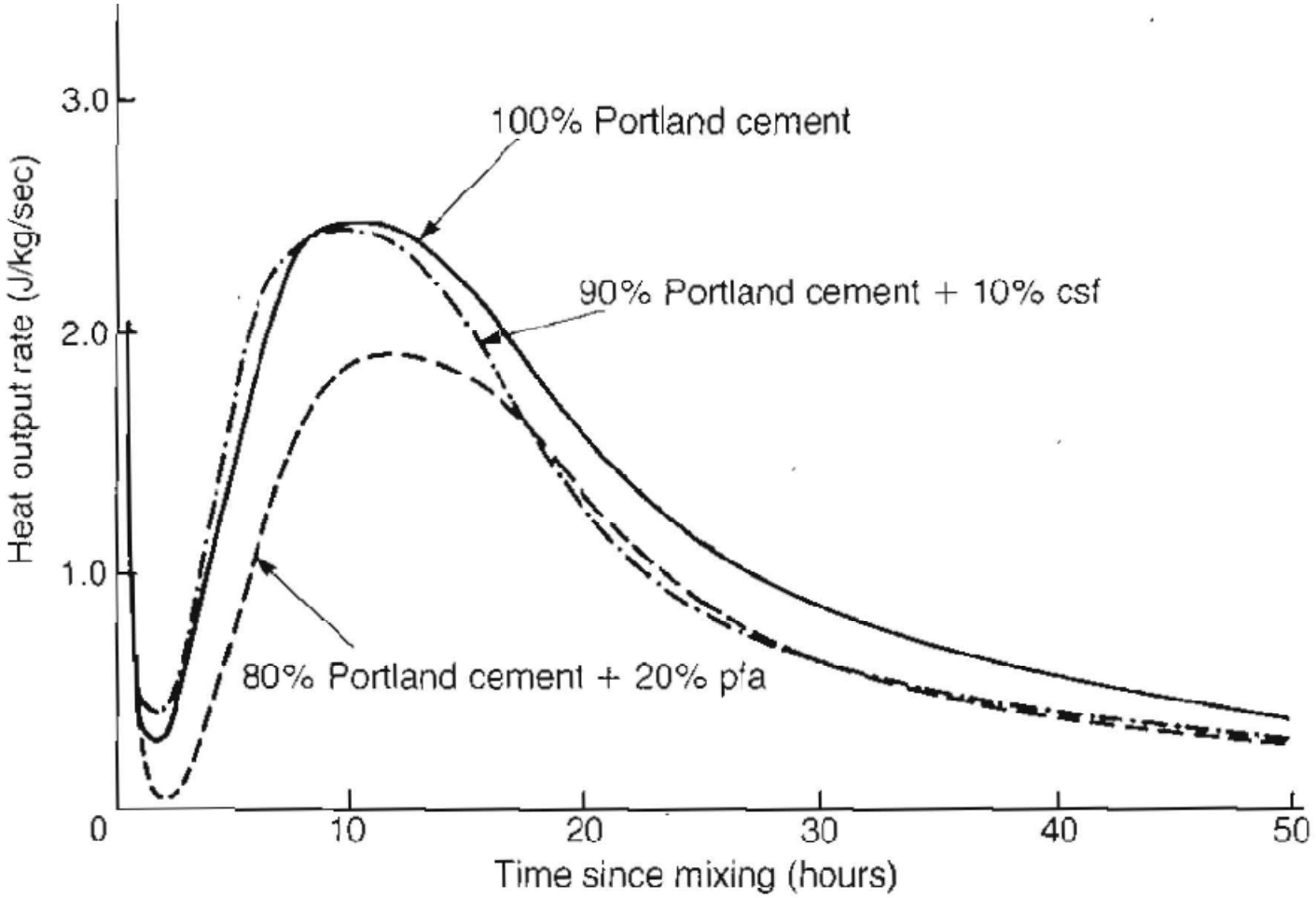
Results showing the effect of cement content on curing temperatures under adiabatic conditions. (Original results by Bamforth, 1988. This figure adapted from Illston, 1996.)



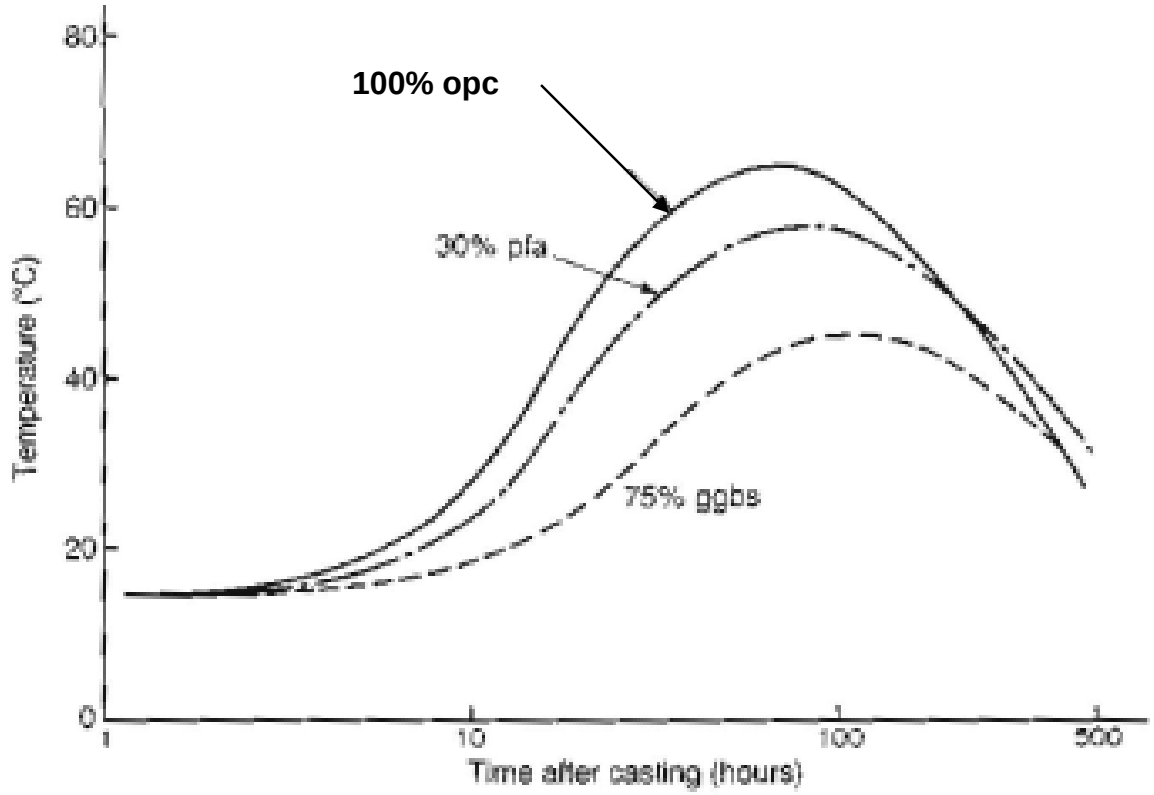
Effect of concrete depth on temperature rise at mid-depth of a slab during hydration. Placing temperature = 20°C, portland cement content is 400 kg/m^3. (Original results by Browne and Blundell, 1973. This figure adapted from Illston, 1996.)



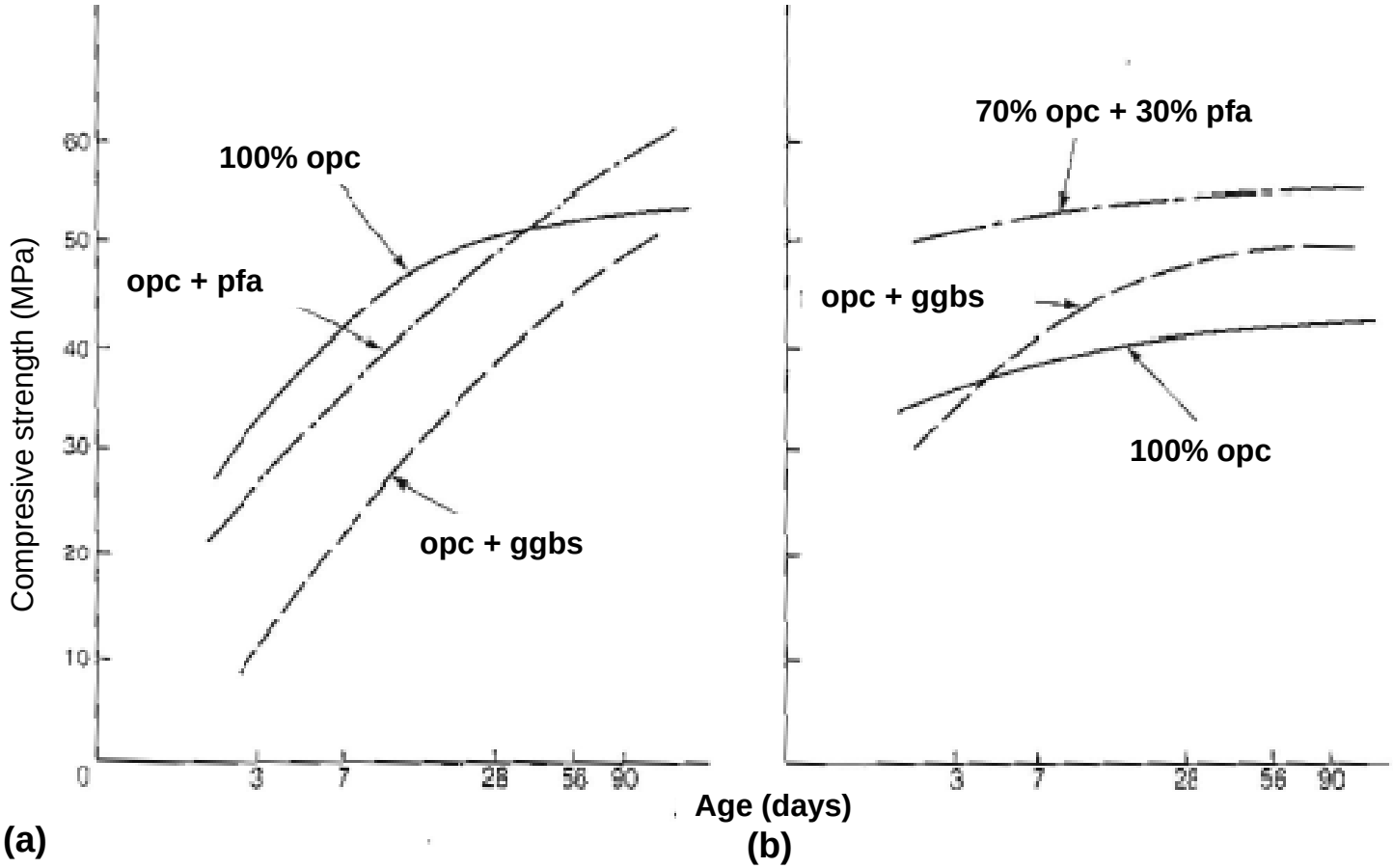
Effect of curing temperature on concrete strength. Experiments performed with ordinary portland cement and water/cement ratio of 0.4. Optimal temp appears to be around 13°C. (Original source of data: Klieger, 1958. This figure adapted from Illston, 1996.)



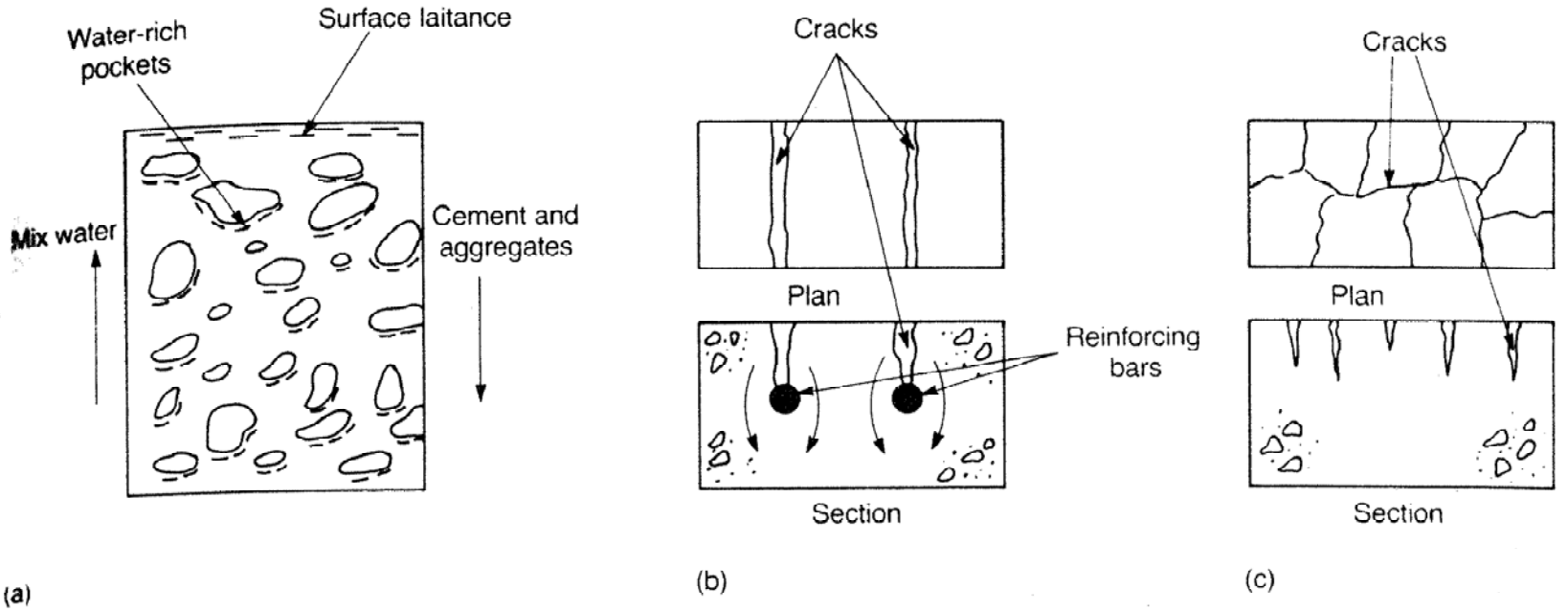
Heat output rates during hydration with opc paste and with cement replacement materials. (Original data by Meland; This figure adapted from Illston, 1996.)



Temperature at mid-depth of a 2.5m deep pour during hydration of concrete made with 100% opc, 70% opc + 30% pfa, and 25% opc + 75% ggbs. (Original data by Bamforth, 1980. This figure adapted from Illston, 1996.)



Strength development of pcc made with 100% opc, 70% opc + 30% pfa, and 25% opc + 75% ggbs. The strengths in (a) are when the pcc was cured at 20°C, and in (b) the strengths are when the concrete was cured at mid-depth of a 2.5m deep pour.



Effects of movement in freshly placed concrete: (a) bleeding; (b) plastic settlement cracking; and (c) plastic shrinkage cracking. (Adapted from Illston (1996))