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Table 1. Relative Rates of Sulfate Expansion of Mortar Prisms, % (Reference 4)

Compound composition of cement	1.8% $MgSO_4$	2.1% Na_2SO_4	Saturated $CaSO_4$
80% C_3S + 20% C_3A	0.5% in 4 days	0.5% in 7 days	0.5% in 11 days
40% C_3S + 40% + 20% C_4AF	0.5% in 43 days	0.06% in 3 years	0.07% in 3 years
50% C_3S + 50% C_2S	0.5% in 65 days	0.04% in 12 years, then more rapid expansion	0.19% in 18 years

P. Kumar Mehta, Professor Emeritus in the Civil Engineering Department at the University of California at Berkely

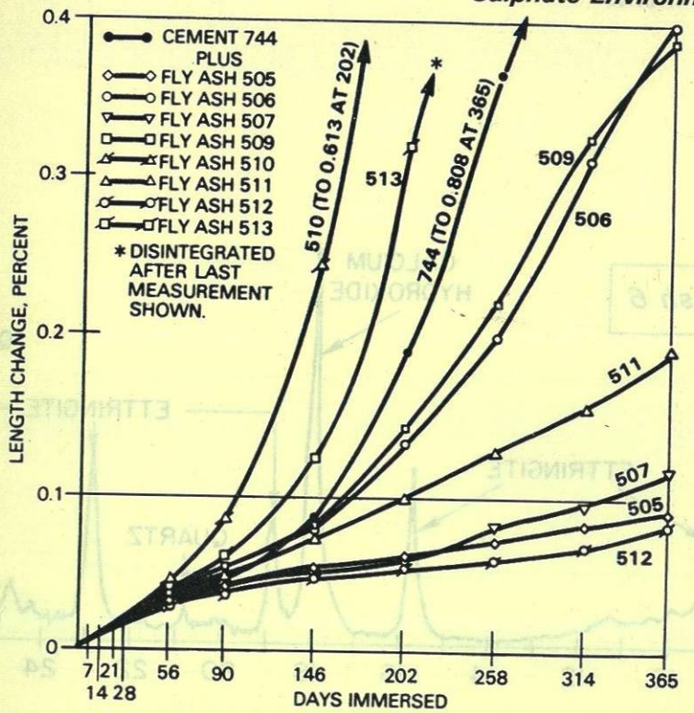

Fig. 1. Length change on sulfate immersion in cement-fly ash mixtures containing 30% fly ash (Reference 29)

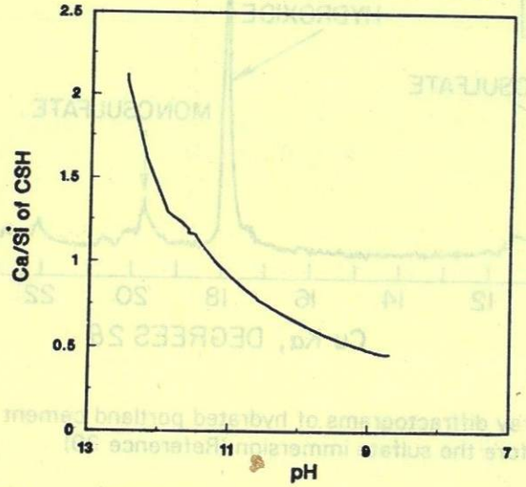

Fig. 2. Change in C-S-H composition with pH (Reference 36)

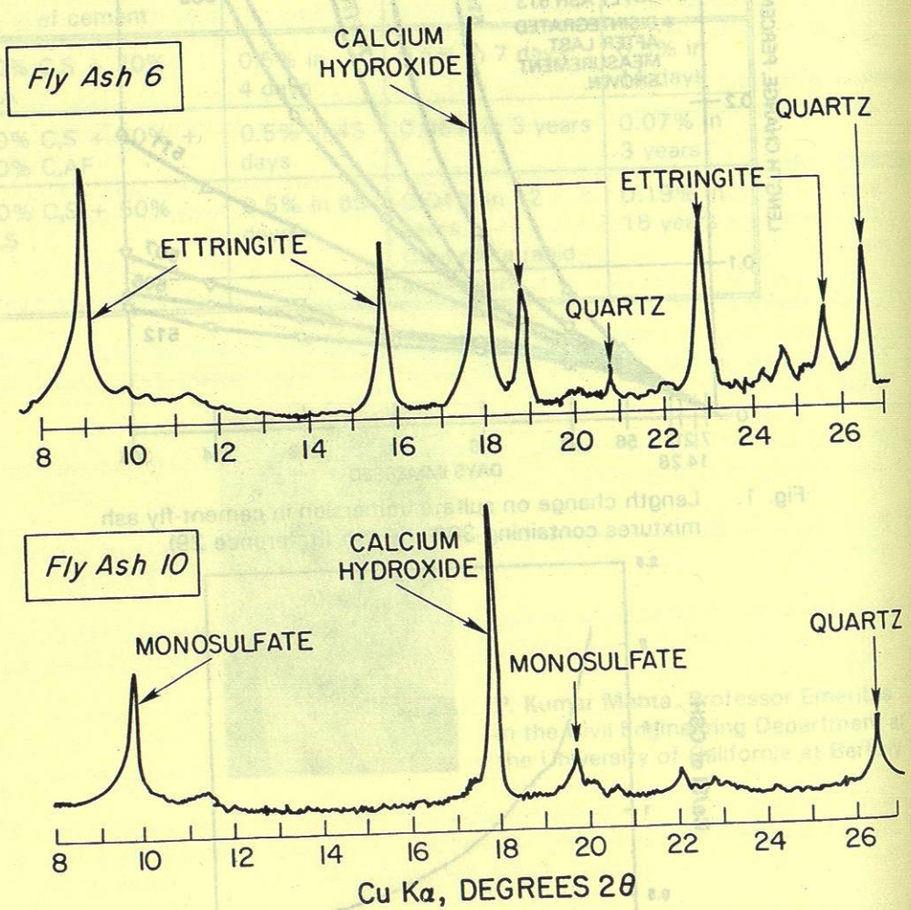

Fig. 3. X-ray diffractograms of hydrated portland cement - fly ash mixtures before the sulfate immersion (Reference 39)