A STUDY ON THE METHOD OF MEASURING THE CHLORIDE THRESHOLD VALUE OF CORROSION AND ON THE ESTIMATION OF THE VALUES

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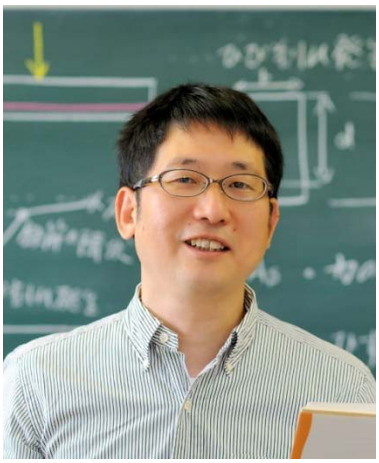

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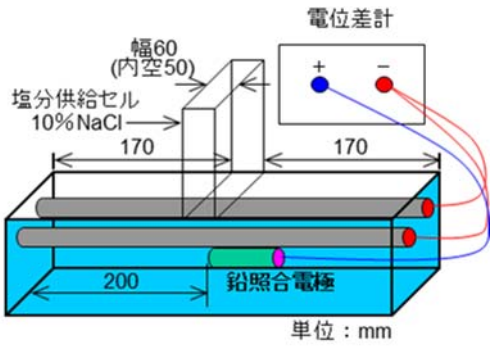
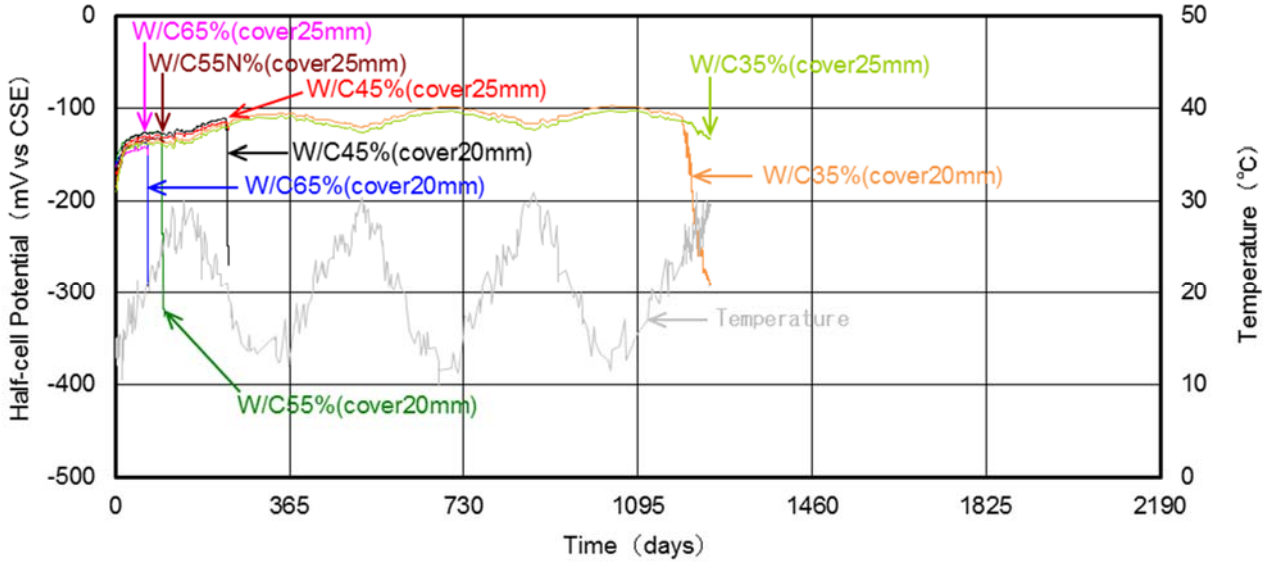
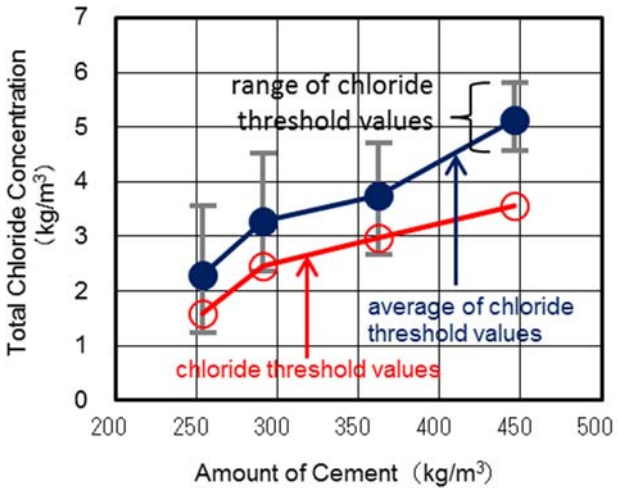
In this study, a method was developed to accurately estimate the threshold value of chloride ion concentration for corrosion initiation in reinforced concrete. For each concrete specimen, chloride ions were supplied through a defined area of the surface and the half-cell potential between a rebar and a reference electrode embedded in the specimen was measured every ten minutes. As measurements continued, a sudden drop in half-cell potential was observed. At that time, the specimen was broken open and rebar corrosion in small surface region was confirmed. By applying this method, the threshold value of chloride concentration can be estimated by determining the chloride ion concentration at the time of this potential drop. The estimated chloride threshold values for ordinary Portland cement concretes with cement contents between 254 and 446 kg/m^3 are in the range of 1.6 to 3.6 kg/m^3.



Measurement of half-cell potential



Changes in half-cell potential with time (concrete specimens made with ordinary Portland cement)



Relation between amount of cement and threshold chloride value (concrete specimens made with ordinary Portland cement)