

No. 92013 A Study on Establishment of Designing and Screening Method
of Corrosion Resistant Paint and Lining for Sea Water

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Summary

The corrosion damage of epoxy resin under erosion condition has been investigated with using the jet slurry apparatus.

The resin used was bisphenol-A type epoxy resin cured with phthalic anhydride. Pure water and KOH solution were used as the slurry liquid, and silica sand was used as the slurry particle.

The damage was evaluated by measurement of weight change, observation of the cross section and damaged surface by optical and scanning electron microscope and so on.

The resin system formed the corroded layer by immersion into KOH solution.

Following results were obtained.

- (1) The weight loss of specimen by pure corrosion increased simply with increase of the concentration of KOH solution. But the effect of immersion time on the weight loss showed more complicated behaviors. Because the weight loss was a difference between the penetration of liquid and the dissolution of resin by corrosion.
- (2) The weight loss by pure erosion (erosion by water slurry) increased with increasing jet slurry velocity and exposure time.
- (3) Under corrosive environment, erosion damage showed the same tendency as it in pure water. However the values of erosion damage were different from that of pure erosion.
- (4) This is because of the mutual action of erosion and corrosion.

The weight loss caused by the mutual action were calculated from experimental data. These results showed that the total damage rate was accelerated or decelerated by the mutual action.