

CORROSION INHIBITION OF ZINC IN TROPICAL  
SEAWATER

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## Corrosion inhibition of zinc in tropical seawater / Norfahana Mazlan Huzairi.

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## **CORROSION INHIBITION OF ZINC IN TROPICAL SEAWATER**

**By**

**NORFAHANA BINTI MAZLAN HUZAIRI**

**A thesis submitted in partial fulfillment of the requirements for the award of the  
degree of Bachelor of Applied Science (Physics, Electronics & Instrumentation)**

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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: *Coral bleaching*  
*Inhibition of zinc in Tropical Seawater*

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telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Fizik sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains Gunaan (Fizik Elektronik & Instrumentasi), Fakulti Sains dan Teknologi, UMT.

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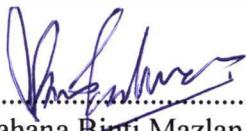
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## **DECLARATION**

I hereby declare that this thesis entitled Corrosion Inhibition of Zinc in Tropical Seawater is the result of my own research except as cited in the references.

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## CORROSION INHIBITION OF ZINC IN TROPICAL SEAWATER

### ABSTRACT

The growing environmental concerns have led to the formulation of corrosion inhibition in tropical seawater. The main objective of this study is to investigate the effect of the corrosion inhibition of zinc in seawater after adding sodium benzoate with different percentage. The samples were immersed in 100% seawater, 10% sodium benzoate, 20% sodium benzoate, 30% sodium benzoate, 40% sodium benzoate and 50% sodium benzoate. The samples were immersed for 30 days and the result were taken every 6 days intervals. The weight loss of the sample was recorded and using the formulae the result were calculated and graph were plotted. Using the weight loss measurements, the corrosion rates of zinc in solutions were determined. With the increment of the sodium benzoate, the weight loss of the zinc sample is decreased. The solution of seawater and 50% sodium benzoate will have the least weight loss and this proved that it will give the least corrosion rate. This will proved that the sodium benzoate inhibit the zinc from the corrosion. There for, the corrosion rate will be decreasing with the increasing of time. The sample morphology had been examined using Metallurgical Microscope to obtain microscopic image of the corrode sample. The sodium benzoate covered the surface of the zinc sample and this behavior then showed that the samples were slowing down the corrosion rate. The use of sodium benzoate is a useful technique for the corrosion inhibition of the zinc in tropical seawater.

## **PERENCATAN KAKISAN ZINK DI DALAM AIR LAUT**

### **ABSTRAK**

Pembangunan persekitaran yang banyak dititikberatkan telah menghasilkan formula penghalang pengaratan terhadap air laut. Objektif utama kajian ini dilakukan adalah untuk menyelidik kesan penghalang pengaratan zink di dalam air laut setelah ditambahkan beberapa peratusan garam benzoate. Sampel direndamkan di dalam 100% air laut, tambahan 10% garam benzoate, 20% garam benzoate, 30% garam benzoate, 40% garam benzoate dan 50% garam benzoate. Sampel direndamkan selama 30 hari dan sampel akan dikeluarkan setiap 6 hari untuk pengambilan data. Pengurangan berat sampel direkodkan dan dengan menggunakan formula yang dikaji, keputusan yang didapati dikira dan graf diplot. Dengan menggunakan pengiraan pengurangan berat sampel, kadar pengaratan zink diperoleh. Bagi setiap pertambahan peratusan sodium benzoate di dalam sampel air laut, jumlah pengurangan zinc akan berkurang. Tata bentuk zink dikaji dengan menggunakan Metallurgical Microscope untuk mendapatkan imej mikroskopik terhadap sampel yang telah terkakis. Garam benzoate akan menghasilkan lapisan nipis pada permukaan zink yang betindak sebagai perencat kepada kakisan. Sodium benzoate adalah salah satu teknik berkesan bagi perencatan kakisan oleh zinc di dalam air laut.