

## INTISARI

Kondisi alam Indonesia yang beriklim tropis, dan dekat dengan lingkungan laut yang merupakan faktor yang dapat mempercepat proses korosi. Korosi adalah rusaknya suatu bahan atau menurunnya kualitas suatu bahan karena terjadi reaksi dengan lingkungan sekitarnya. Korosi hanya dapat dikendalikan atau diperlambat laju korosinya. Tujuan penelitian ini adalah untuk mengetahui pengaruh lingkungan pantai terhadap laju korosi dan sifat mekanik pada baja karbon sedang yang diberi perlakuan panas quenching normalizing serta dibandingkan dengan spesimen yang diberi perlakuan panas normalizing.

Dalam penelitian ini, bahan yang digunakan adalah baja karbon sedang dengan kadar karbon 0,65%. Proses terkorosinya spesimen dengan cara spesimen diletakkan pada lingkungan pantai, kemudian dilakukan pengambilan dan pengujian secara berkala 1 bulan, 2 bulan, 3 bulan dan 4 bulan.

Hasil penelitian menunjukkan bahwa perhitungan laju korosi spesimen quenching normalizing dan spesimen normalizing mengalami kenaikan nilai laju korosi. Nilai laju korosi pada spesimen quenching normalizing yang terkorosi dibulan pertama sebesar 99,10 mdd ( $\text{mg}/\text{mm}^2/\text{day}$ ) dan nilai laju korosi dibulan keempat terkorosi sebesar 204,78 mdd. Spesimen quenching normalizing mengalami kenaikan nilai laju korosi sebesar 106,47%. Sedangkan nilai laju korosi pada spesimen normalizing yang terkorosi dibulan pertama terkorosi sebesar 105,41 mdd dan nilai laju korosi dibulan keempat terkorosi sebesar 213,10 mdd. Spesimen normalizing mengalami kenaikan sebesar 102,16%. Hasil pengujian tarik untuk mengetahui kekuatan tarik maksimal spesimen quenching normalizing serta spesimen normalizing jika dibandingkan tidak menunjukkan perubahan kekuatan tarik maksimal secara signifikan. Dari pengamatan struktur mikro, bahwa spesimen quenching normalizing dengan media pendingin oli memiliki fasa ferit (putih), perlit (hitam), bainit (keabu-abuan). Sedangkan spesimen normalizing memiliki fasa ferit (putih) dan perlit (hitam).

**Kata kunci: Korosi, Baja karbon, Pantai, Quenching, Normalizing**

## Abstract

Indonesia's natural tropical climate and close to the coastal environment are the factors that can accelerate the corrosion process. Corrosion is the destruction of a material or down grade of the material quality because of the reaction with the environment surrounding the corrosion can only be controlled or slowed the rate of corrosion. The purpose of this research is was to investigate effect of coastal environment on corrosion rate and mechanical properties on medium carbon steel which was given heat treatment of quenching normalizing and compared with that treatment normalizing specimen.

In this research, the material used is carbon steel with 0,6% of carbon content which composition already tested. The process of its specimen corrosion is by putting the specimen in coastal environment, and the examination and data retrieval will be taken periodically within 4 months.

The result of this research shows that the corrosion rate of quenching normalizing specimen and normalizing specimen experienced an increase in its corrosion rate. The corrosion rate value of quenching normalizing which is corroded in first month is 99,10 mdd ( $\text{mg}/\text{mm}^2/\text{day}$ ) and the corrosion rate value in fourth month is 204,78 mdd. Quenching normalizing specimen experienced an increase in its corrosion rate which is 106,47%. While the corrosion rate value of normalizing specimen which is corroded in the first month is 105,41 mdd and its corrosion rate value in fourth month is 213,10 mdd. Normalizing specimen experienced 102,16% increases in its corrosion rate value. The tensile test result which is used to discover the maximum tensile strength of both quenching normalizing specimen and normalizing specimen doesn't show significant changes in their maximum tensile strength. From an observation of microstructure that quenching normalizing specimen with oil cooling medium has ferrite phase (white), perlite (black), bainite (greyish). While the normalizing specimen has ferrite phase (white), and perlite (hitam).

**Keyword: Corrosion, Carbon Steel, Beach, Quenching, Normalizing**