

CORROSION OF STEEL IN PRESENCE OF
PORTLAND CEMENT AT HIGH TEMPERATURE

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**CORROSION OF STEEL IN PRESENCE OF PORTLAND
CEMENT AT HIGH TEMPERATURE**

**BY
LIM CHIN HAUR**

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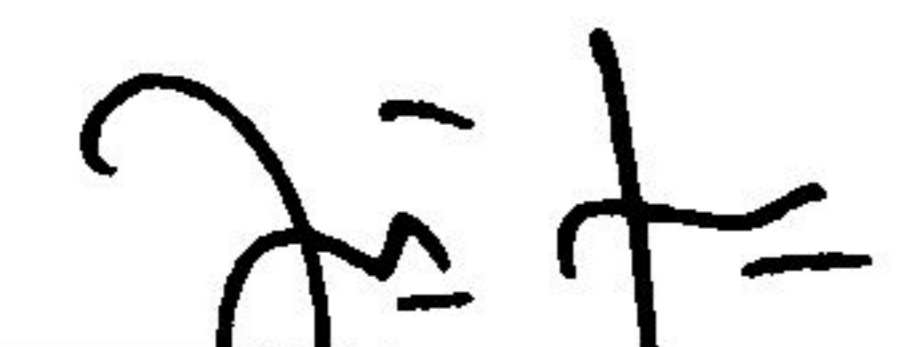
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ABSTRAK

Kertas kerja ini adalah mengenai pengamatan ke atas pelbagai grade keluli dengan kehadiran Portland simen pada suhu tinggi.

Konkrit boleh memberi keluli perlindungan masa panjang terhadap keadaan yang sangat mengaratkan yang mana sangat berguna dalam bidang pembinaan. Keadaan pengamatan keluli dengan kehadiran Portland simen pada suhu tinggi akan diperhatikan dalam ujian yang dijalankan. Dalam kes ini, konkrit telah digantikan dengan simen kerana konkrit adalah susah digunakan dalam makmal kerana ia sangat susah disediakan dan peralatan khas diperlukan untuk pengukuran pengamatan keluli dalam konkrit.

Ujian dijalankan dengan menggunakan keluli galvanic dan keluli mild dalam 5 suhu yang berlainan dari 500°C sampai 900°C dengan dilindungi oleh simen dan satu lagi tidak.

Perbincangan dibuat melibatkan 3 faktor major yang memberi kesan pengamatan dimana seperti bawah:-

1. Kesan suhu kepada keadaan pengamatan keluli.
2. Kesan Portland simen kepada keadaan pengamatan keluli.
3. Kesan keadaan persekitaran kepada pengamatan keluli.

Daripada keputusan yang diperolehi, kita mendapati bahawa kadar pengaratn keluli adalah berkadar langsung terhadap suhu. Dalam ujian ini juga didapati bahawa Portland simen tidak mampu memberi perlindungan yang berkesan terhadap pengoksidaan keluli.

ABSTRACT

The research results present the corrosion behavior on different grade of steel in presence of Portland cement at high temperature.

Concrete can provide on steel with long term protection against the corrosive environment which is very useful in construction field. In my test, the corrosion behaviors on steel in cement at high temperature are presented. In this case, the concrete have been replaced by cement since the concrete is difficult to use in laboratory test because it is difficult to prepare and special equipments are need for the corrosion measurement purpose.

The tests are run by use of galvanic steel and mild steel in 5 different temperature which ranging from 500°C to 900°C and either in presence of Portland cement or without.

The discussion has been making around 3 major factors that influence the corrosion behavior which included:-

1. Influence of temperature on corrosion behavior of steels.
2. Influence of Portland cement to the corrosion behaviors of steels.
3. Influence of environment on steel

From the result, we found that the temperature is proportional to the corrosion rate of the steel. In this test, the Portland cement seems can not be effectively protecting the steel from oxidation.