

**STUDY OF BONDING STRENGTH OF  
INORGANIC FILLERS BASED INTUMESCENT COATING**

by

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Dissertation submitted in partial fulfillment of  
the requirements for the  
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(Mechanical Engineering)

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CERTIFICATION OF APPROVAL

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A project dissertation submitted to the  
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January 2012

## CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the reference and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified source or persons

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MUHAMMAD SYAHMI HAMIZOL

## **ABSTRACT**

Intumescent coating is an insulating system designed to decrease heat transfer from fire to substrate structure to maintain its integrity. Zinc phosphate will be used as primer coating on steel coupons to increase adhesive of coating and protect corrosion from occurs. The coating was based mainly are carbon source, acid source, blowing agent, binder and hardener. The main intumescent coating will be tested at high temperature for certain period and it is found very stable and well bound with the steel substrate. However, in this experiment work some additive which is, an inorganic filler will be added into the main formula as reinforcement for the coating. Different formulations with additive will be developed to study the bonding strength of coating with steel substrate. Fire test and shear test will be conduct to achieve the objective of this experimental work. Scanning Electron Microscope will be used to study microstructure and bonding mechanism of coating with the substrate before and after fire test. The results are expected to show whether the additive gives a better bonding with substrate or not.

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