FINAL YEAR PROJECT

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SCHOOL OF ENGINEERING

MARA INSTITUTE OF TECHNOLOGY

SHAH ALAM

PHYSICAL AND MECHANICAL PROPERTIES OF CEMENT-WOOD BASED PANELS.

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SYNOPSIS

The aim of this experimental project is to study the suitability of wood waste as substitute to ordinary agregates in the production of light weight panels the application in non-load bearing structure such as panels or cladding unit. The study was divided into two stages. The first stages dealt with the determination of the suitable ratio of wood/water, wood/cement ratio in order to produced the panels. Three different chemicals were considered in this stage.

The second stages is to test the physical and mechanical characteristic of the cement wood based panel thus produced and to compare with the specification of Malaysian Standard (MS) for cement bonded board.

After several trial a 60 : 40 C:W ratio by weight was found suitable and 12 panels were produced of 550 x 550 x 25 mm dimensions, having an average density of 1100 kg/m^3. However the strength characteristies are less than these specified with M.S. These panels can be used as internal partitions and an ceiling boards. They can be plastered or laminated with other materials for better appearance.

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1.0 WOOD WASTE AND ITS UTILIZATION

1.1 GENERAL INTRODUCTION

This experimental study will introduce a building material which has a good potential in our national low-cost housing schemes. The material known as wood cement board is a panel material manufactured under controlled conditions of temperature and pressure from chemically treated wood mixed with portland cement. The combination of special characteristics of wood and cement in wood cement composite results in a material suitable for use in non-load bearing structural member or as a cladding unit in building.(2) This panel has been described as durable like concrete and workable like wood.(1)

The demand for wood based panels is expanding rapidly and is expected to increase further, particularly in our country where rising living standards will call for substantially greater supply of construction materials. In the interest of economy, there is every incentive to use wood chips from a waste timber such as discussed in this experimental studies.