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STUDY OF THERMAL BEHAVIOUR OF KAOLIN CLAY USING DILATOMETER

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PREFACE

The lay public thinks of KAOLIN CLAY as artware and knows that the products of the earliest artisans were ceramics. The engineer also knows that ceramic materials are used in a wide usage of technical products extending from high-speed cutting tools, to piezoelectric transducers to high frequency magnets and optic fibers.

Instead of using kaolin in the manufacturing of porcelain , firebrick and china ware, kaolin has also been exported on a small scale, for use as rubber filler in Malaysia since 1932. At present there are no proper investigation has been carried out to find the new breakthrough of Kaolin especially on engineering purposes.

This project hopefully can be fruitful as a starting point of intensive research on kaolin clay.

1.0 INTRODUCTION.

Malaysia has relatively large deposits of Kaolin clays and these can be used in manufacture of porcelain , fire brick , china ware , paper and insulation materials.

Engineering Ceramics such as alumina , zirconia , silicon nitride and silicon carbide are characterized by good resistance wear , oxidation and corrosion , when compare with metals and thermoplastics [4]. They have been developed for various applications in metallurgy, in heat engine systems and the aerospace industries.

The development of high-performance materials for many branches of modern technology favors technical ceramics rather than metals. With the expectation of specially developed alloys , the so called high-tech ceramic materials are together with polymeric materials , of great importance in terms of the increase in production efficiency , product improvement and energy and raw material saving , as well as decreasing the load on the environment. Worldwide , significant efforts are being made to characterize analytically ceramic materials , optimize the production method and develop the desired product properties applications.

In general , ceramics have better properties above about 1000^0 C except in one respect to their inherent brittleness. Compared with metals , ceramics have higher strengths at high temperatures , better oxidation and corrosion resistance and also less dense.

Japanese predictions are that the market value of ceramic will grow at about 10% per annum to reach at least US$ 10^{10} by the end of the century. Seventy per cent of this market value will be in electroceramics be ceramic engineering applications for which include insulating substrates in integrated circuits , ferroelectric capacitors , piezoelectric oscillators and transducers , ferrite magnets , and ion-conducting solid electrolytes and sensors.[5]