

CERAMIC SUPPORT PREPARATION FROM WASTE : EFFECT OF
BINDER

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ABSTRACT

Porcelain based ceramic supports from sanitary waste were prepared by using two different types of binders, Polyvinyl Alcohol (PVA) and Polyethylene Glycol (PEG 1500) with three different concentration. Using the sanitary waste as a construction material to prepare ceramic support can reduce the utilization cost of the waste because it is abundant and free. It is also an alternative method that use low cost to produce ceramic support membrane. In order to make a good ceramic, the most important things is to look the membrane itself about the materials used, methods to fabricated the ceramic membrane and the equipment used to characterize the membrane. The purpose of the research were to identify the ceramic support that has been prepared from the waste and to identify the effect of binder on the ceramic support itself. The binders are introduced to help the ceramic support membrane from crack as it can acts as an agent to avoid the support from crack easily. The aimed of this research is to prepare the ceramic membrane support using waste with the help of PVA and PEG as a binders by using compression method. The ceramic properties were then analyzed by Fourier Transform Infrared Spectroscopy (FTIR) and Scanning Electron Microscopy. Result shows that 10wt% PEG is optimum in terms of organic materials as it identify the molecular components and has a good structures existed in the membrane. The characteristics that needed to be done in this research has been successfully conducted.

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CHAPTER 1

INTRODUCTION

1.0 Research Background

Generally, membranes can be classified into two general groups known as organic and inorganic. Organic can be acknowledge as polymeric while inorganic membranes can be acknowledge as ceramic membranes(M.Khalili,2014). In history, ceramic industry has been born since the human discovered the clay and creatively form it into objects using simple method by mixing the clay with the water before burnt it at high temperature. Ceramic has become one of the ancient industries in the world. Now, it has become one of the demand in the world. There are a lot of production of ceramic from expensive materials to low expensive material.

Industry's now has been searching the new materials that has low cost to produce ceramic. One of the materials are by using the waste to produce the ceramic. The waste such as sanitary waste, glass waste, fly ash has been introduced to the world in production of ceramic by adding other additives such as binders to make the ceramic more strong and not easily crack. In order to make a good ceramic, the most important things is to look the membrane itself about the materials used, methods to fabricated the ceramic membrane and the equipment used to characterize the membrane. The research is focusing on the ceramic support from the ceramic membrane that has been prepared from the waste and to identify the effect of the binders on the ceramics support itself. Ceramic membrane are flexible because it can be operated at a wide