UNIVERSITI TEKNOLOGI MARA

RHEOLOGICAL CHARACTERIZATION OF VARIOUS PERCENT WEIGHT OF SILICON RUBBER

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July 2017

ACKNOWLEDGEMENT

I would to express my thanks toward my supervisor Dr Rahida Wati Sharudin for giving me a valuable advice and guidance upon completing my Research Project. I also would like to express to y parent, for their moral support since the beginning of my journey. To my friend whom have giving me advises and supports, I appreciate it every guidance I acquire.

ABSTRACT

Silicone rubbers are widely used for many industries purpose. There are two type of silicone rubbers which are liquid silicone rubbers and solid silicone rubber. However, liquid silicone rubber is uncured state or adhesive state which is required catalyst to be cured to form solid state. However the curing process is the result of the crosslink and curing agent. However, the right amount of percent weight between the liquid silicone rubber and curing is the key to determine the effectiveness of curing process take place. This report is to study the rheological properties and crosslink behavior on various percent weight of silicone rubber. The method that used in this experiment is mix and pour technique and the equipment involve is Electronic Rheometer. There are 5 sample of different ratio percent weight part A (liquid silicone rubber) and part B (platinum catalyst) which are 1:10, 2.5:7.5, 5:5, 7.5:2.5 and 10:1 As the end of the experiment, percent weight 10:1 give a better potential in term of curing process as it is highly crosslink, crosslink achieve and the sample shown a elastic behavior.

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CHAPTER ONE

INTRODUCTION

1.1 Summary

Silicone rubber (polysiloxane) is an inorganic synthetic elastomer and are commonly used in industry. It is a polymer that is composed from silicone, carbon, hydrogen, and oxygen that is form from the cross linked. A silicone based polymer. Silicone rubber is generally not reacted, stable properties, able to withstand extreme environment and temperature at -55°C to -300°C. The silicone rubber mechanical properties such as tensile strength, elongation, tear strength and compression set are far superior to organic rubber.

1.2 Research Background

The silicone have become the commercial compound after great electrical insulation and thermal stability demonstrated by Hyde of Dow in 1940. There are two type of silicone rubber. Liquid silicone rubber and solid silicone rubber. These two types have many wide uses in various industries such as medical, electrical chemical etc. In order to form a solid type silicone rubber, a curing process is required by mix the liquid silicone rubber with curing agent.

1.3. Problem Statement

In uncured state, silicone rubber is in form of liquid or adhesive state. To form a solid state silicone rubber, a curing process is required and this can be done by using platinum – catalysed cure system. Upon the completion of curing process,