

**UNIVERSITI TEKNOLOGI MARA**

**BATIK DISCHARGE AND DISCHARGE-RESIST  
PRINTING ON LYOCELL, LINEN (FLAX),  
POLYESTER AND POLYESTER/COTTON  
BLEND FABRICS**

**MUHAMMAD ISMAIL BIN AB KADIR**

**Thesis submitted in fulfillment of the requirements  
for the degree of  
Master of Science**

**Faculty of Applied Sciences**

**June 2006**

## ABSTRACT

Batik fabric is printed using physical resist printing method i.e. the use of wax as physical resist agent. Discharge printing is opposite to resist printing. The use of chemical whether as resist or discharge agents to create batik motifs will produce fabrics known as 'fabrics with batik motifs' i.e. not a true batik according to the definition. The purpose of this research was to produce batiks on 'new' fibers/fabrics of lyocell, linen, polyester and 65/35 polyester/cotton blend fabrics by the application of discharge and discharge-resist printing styles. The techniques used were canting, block and hand screen printing. Discharge printing style was applied on both lyocell, linen, polyester and 65/35 polyester/cotton blend fabrics whilst, discharge-resist printing style was carried out polyester and 65/35 polyester/cotton blend fabrics. The dischargeability of dyestuffs (reactive and disperse) was determined prior to the application of discharge and discharge-resist styles. The fixation methods applied on the printed fabrics were dry heat and ironing. The printed fabrics were then evaluated base on discharge effects and fastness properties to washing, rubbing (crocking), perspiration and light. Tensile strength of unprinted and printed fabrics was also compared. The discharge and discharge-resist styles provide alternative techniques to batik producers in varying their products and designs as well as their method of printing. The 'impossible' to print batik designs on polyester and 65/35 polyester/cotton blends and introduction of new fibers/fabrics of lyocell and linen will create a new market potential for batik producers which can cater different classes of society due to the differences in quality of fibers/fabrics.

## Candidate's Declaration

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as reference work. This thesis has not been submitted to any other academic institution or non-academic institution for any other degree or qualification.

In that event of my thesis be found to violate the conditions mentioned above, I voluntarily waive the right of conferment of my degree and be subjected to the disciplinary rules and Universiti Teknologi MARA.

Candidate's Name : Muhammad Ismail bin Ab Kadir

Candidate's Signature:  .....

Date : 05/07/2006 .....

## TABLE OF CONTENTS

TITLE PAGE	
ABSTRACT	ii
CANDIDATE'S DECLARATION	
ACKNOWLEDGEMENTS	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF PLATES	xi
CHAPTER ONE: INTRODUCTION	1
1.1 Background of the Study	1
1.2 Problem Statement	2
1.3 Significant of the Study	4
1.4 Scope and Limitations of the Study	5
1.5 Objectives	6
CHAPTER TWO: LITERATURE REVIEW	8
2.1 Introduction	8
2.2 A Brief History of Batik	8
2.2.1 The Origin of Batik	8
2.2.2 Early Development of the Batik Making	9
2.3 A Brief Review of Batik Making	10
2.3.1 Handcrafted Batik Methods	11
2.3.1 [a] Indonesian/Javanese Batik	11
2.3.1 [b] Malaysian Batik	15
2.3.1 [c] A Brief Review of Development in Batik Making Tools	16
2.4 Industrial Production of Batik	17
2.4.1 Real Wax Prints	17
2.4.2 Imitation Wax Prints	19

## CHAPTER ONE

### INTRODUCTION

Traditionally batik is a handcrafted resist printing technique that started over 1,500 years ago (Fraser-Lu, 1986). However, there is an alleged claim that printing using wax started about 2,500 years ago (Wessmann, n.d.). The technique of producing batik refers to drawing/printing of patterns or designs or motifs on a cloth following the principle of resistance whereby hot, molten wax, consisting of paraffin wax, beeswax, or a combination of the two, is applied to a fabric. The fabric is then dyed and the wax acts as a resist agent preventing selected areas of the fabric from absorbing dye. The process of waxing and dyeing is repeated several times to form multicolored designs on the fabric. Wax is removed through boiling at the end of the process (Wan Teh, 1996).

Dyes and color used, patterns and motifs, application of wax and removal of wax vary from region to region and culture to culture. Each region and culture adopted their own methods and designs as well as shade and coloration in producing batik [Fraser-Lu, 1986; History of Batik, n.d.].

Discharge printing is opposite to resist printing. It is a process of creating designs or motifs on a fully dyed fabric with the present of suitable discharging (reducing) agent. Under the right processing conditions, the discharging agent will chemically destroy the ground shade and produce a white discharge. If the discharge paste is incorporated with dyestuffs stable to the agent (undischARGEABLE dyestuffs), an illuminant or colored discharges are produced under the processing conditions, by simultaneously destroying the ground shade and fixing the illuminant color.

#### 1.1 Background of the Study

Batik can be produced using a few techniques and processes. The most common techniques are *batik terap* (block print batik), *batik tulis* (hand drawn batik) which is the most laborious freestyle, *batik stensil* (stencil batik) and *batik skrin* (screen