CHAPTER 1

INTRODUCTION

Colour fastness is an important property of industrial products, such as printing, paper, textiles, plastics, etc. Nowadays products must be manufactured for markets all over the world. If people in various countries have significantly different perceptions of an acceptable colour it can cause major export problems. Colour fastness evaluation is a judgement of the degree of contrast between treated and untreated specimens, and then compared with the relevant steps in the grey scale, which includes a set of neutral pairs of increasing contrast that are colorimetrically standardised by the International Organisation for Standardisation (ISO). In the textile industry there are two standard grey scales: ISO 105-A02 and 105-A03 for assessing change in colour and staining respectively. These evaluation methods are widely used because they are very comfortable. The results depend on different subjective experiences, nationality and the culture of the observers and conditions of each experiment. A more reliable method is to use an instrumental method such as to measure the colour of the specimen by a spectrophotometer to obtain XYZ or L*a*b* values. Then colour fastness values are calculated using appropriate colour difference (ΔE) formulae. However, these formulae seem not to represent the perception of all observer groups, thus new formulae continue to be developed. The formulae which are normally used for assessment of the change in colour include CIELAB, CMC (l:c), ISO standard, $N_c^{\#}$, and F_c (1). The formulae for assessment of staining include CIELAB, SSR(ISO), SSR(UK), N_S and F_S (2).

1.3 Objectives

The purpose of this work is to analyse the characteristics of colour fastness assessments of Thai people, relevant to performance of the colour fastness formulae.

1.4 Scope of the Research

In this research, difference colour fastness formulae for assessing change in colour and staining are reconsidered. Sets of experimental results were used to test the performance of the various formulae and to illustrate the lack of agreement between them and visual results. The differences between the formulae were calculated in order to find out the correlation coefficients.

1.5 Content of the thesis

Chapter 2 deals with the overview of the theoretical considerations and literature reviews. Chapter 3 gives the description on materials under study and the experimental procedures and apparatuses. Chapter 4 contains the results and discussion on the visual assessment, the instrumental assessment, the correlation coefficient values of the relationship between visual and instrumental assessments and the relationship among various visual data sets. Finally, the results are concluded in Chapter 5 along with some possible suggestion.