



CHAPTER I INTRODUCTION

Nowadays, surfactants play an important role in various application; especially, in households industry, which having large volumes. One of the most important applications for households industry is detergency. Detergency is the removal of unwanted substances; which are called “soils”, from a solid surface by contacting them with a liquid, usually a surfactant-containing solution. Soils can be classified into three types which are (1) liquid (oily) soil (water-insoluble liquid soils) including hydrocarbon, saturated or unsaturated fatty acids, esters of fatty acids, and alcohol, (2) particulate soils such as clay, carbon, dust, iron oxide, and etc., and (3) stains which are intensively colored substances; for instance, blood, chocolate, coffee, egg, ink, and natural organic colorants in general (Carroll, 1996; Kissa *et al.*, 1987; N.Yanumet *et al.*, 2003).

Semi-solid oily soils are special types of the soils which the substances have properties between liquid and solid; for example, butter, margarine, methyl palmitate, and etc. This type of soils becomes a challenging problem in detergent industry; especially in U.S. and European countries, because the semi-solid soils will change the states when temperature changes. Therefore, it is of great interest to find new technology, which has economical friendly for removing semi-solid oil from fabric surface. The appropriate temperature and surfactant formula— allow microemulsion to form— are hypothesized for providing an effective detergency. Therefore, the study of washing temperature effect on semi-solid oil removal from fabric surfaces is of great interest.

For detergency process, detergency performance is dependent on several parameters such as type and concentration of surfactants, salinity, washing time, agitation speed, and washing temperature. The main component of the cleaning formulations is surface active agent or surfactant which its main function is to remove both oily and particulate soils (Rosen, 2004). Anionic surfactants are excellent in removing particulate soil, while nonionic surfactants are good for liquid (oily) soil removal.

In this research, an extended surfactant [Alfoterra[®], C145-4(PO)], which having a dual anionic and nonionic character, was employed to remove semi-solid oil (methyl palmitate) from fabric (a polyester/cotton blend) under different surfactant concentrations, salinities, and washing temperatures.

The aims of this study were to investigate how effective of the use of extended surfactant to remove this semi-solid oil, find the optimum formulation, and study whether washing temperature affecting the detergency performance or not.