CHAPTER I
INTRODUCTION

As fast growing demands of both household and industry products, new developments especially for cleaning agents play an important role in formulations for various products including soap, shampoo, and detergents. In detergency process, there are 3 main types of soils: oily soil, particulate soil, and stains which are required different formulations for removal. 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). The detergency performance depends on several functions including type and concentration of surfactants, the characteristics of fabric (i.e. hydrophobic or hydrophilic surface), the physical and chemical properties of soils, pH, salinity, washing time, mechanical agitation, and temperature. Anionic surfactants are excellent in removing particulate soil while nonionic surfactants are good for oily soil removal. Tongcumpou *et al.*, 2005 reported that the detergency performance for oily soil removal was found to correspond to the minimum interfacial tension (IFT) or under the Winsor type III microemulsion conditions. To achieve high detergency efficiency, re-deposition of removed soil has to be minimized (Fong *et al.*, 1953). However, most of fabrics have both oily and particulate soils which are hard to remove by any single surfactant alone.

In this research, mixed surfactants of methyl ester sulfonate and alcohol ethoxylate with different numbers of ethylene oxide group were employed to remove mixed soils from fabrics. Two types of test fabric were pure polyester and pure cotton to represent hydrophobic and hydrophilic surfaces, respectively. Kaolinite clay and motor oil were chosen to represent hydrophilic particulate and hydrophobic oil, respectively. Moreover, a commercial detergent product was also tested in order to compare the detergency performance with the selected formulations.