CHAPTER I

INTRODUCTION

Paint is used in many industries such as automobiles, marines. Major applications of paint are decorating, surface protecting and substrate coating with opaque color film. Normally, paint consists of polymer materials which shows adhesive properties on specific types of surface. Three main ingredients of paint are pigment, resin and solvent. Dispersion process occurs when pigment is mixed in a resinous binder and viscosity of paint is controlled using an acceptable application of solvent. Usually, one or more additives are applied to modify film properties, application and storage characteristics. Paint production can be divided into 2 processes: basic color production and color matching. However, this study would concentrate on basic color production only.

Basic color production process consists of mixing and grinding. The mixing process is simply the mixing of raw materials such as pigment, resin and solvent. Pigment is produced in fine particle form but it usually agglomerates or aggregates during storage due to humidity. Then, to create the normal pigment dispersion, in-processed paint is passed to the grinding process using grinding machine. Paint which has been passed grinding step (deagglomerate and deaggregate) is called mill base. Good mill base should have an acceptable level of fineness which is the measurement of level of particle size in the mixture. Important factors which affect the fineness of paint are mixing time, viscosity, flow rate of grinding machine and grinding time.

Most of the production in paint industry uses production procedure and conditions which have been successfully used in the past. The conventional procedure usually uses long mixing time and low viscosity mixture to ensure that mill

base would be produce at acceptable level of fineness. There is no attempt yet to find true relationship between fineness of mill base and important parameters.

In this study, the important factors affecting fineness of mill base will be studied. The experiments are conducted on actual production process and the fineness of mill base is measured using grind gauge meter. In the study, raw materials are mixed and dispersed in grinding machine. Variable conditions are 60,90 and 120 minutes of mixing time, 70,72,74,76 and 85 KU of viscosity, 16,18 and 20 kg./min. of flow rate in grinding machine and 3, 4, 5, 6, 7 and 8 hours of grinding time. The expected results from these factors are affect to production time, productivity and quality of paint.