

CHAPTER I

INTRODUCTION

In the area of polymer processing, single screw extrusion is the most common method to produce the polymer products. The extrusion is also related to many parameters, which are used to control system during and after processing. During processing, the consideration of processibility can be expressed as pressure used and torque. Whereas, the final properties that manufacturer usually concerns are mechanical and physical properties after processing. Two important characteristics of polymer that exhibit to control these behaviors are average molecular weight (M_w) and molecular weight distribution (MWD). Both M_w and MWD also significantly affect on rheological properties; e.g. melt flow property. Because variations in M_w and MWD of a given polymer has influenced on these properties, homopolymer blending of high density polyethylene (HDPE) was set up at various combination of M_w and MWD in order to study the compromise between their processibility and mechanical behaviors. A studying of effect of MWD on polymer processing were reported that the MWD of commercial grade of polyolefin had an important effect on the output rate and pressure development in the extruder (Christensen *et al.*,1991).

The present investigation deals with the blends of HDPE. Whereas, twin screw extruder is employed to improve melting and mixing of samples. Because the relatively simple structure of HDPE, the results can be evaluated by neglecting its structure however, temperature, another parameter, which are related to polymer must be controlled. In order to obtain the relationship between mechanical properties and processibility of HDPE, the results must be considered to obtain optimum processing which also moderates mechanical properties of samples.